TRANSACTIONS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

1882

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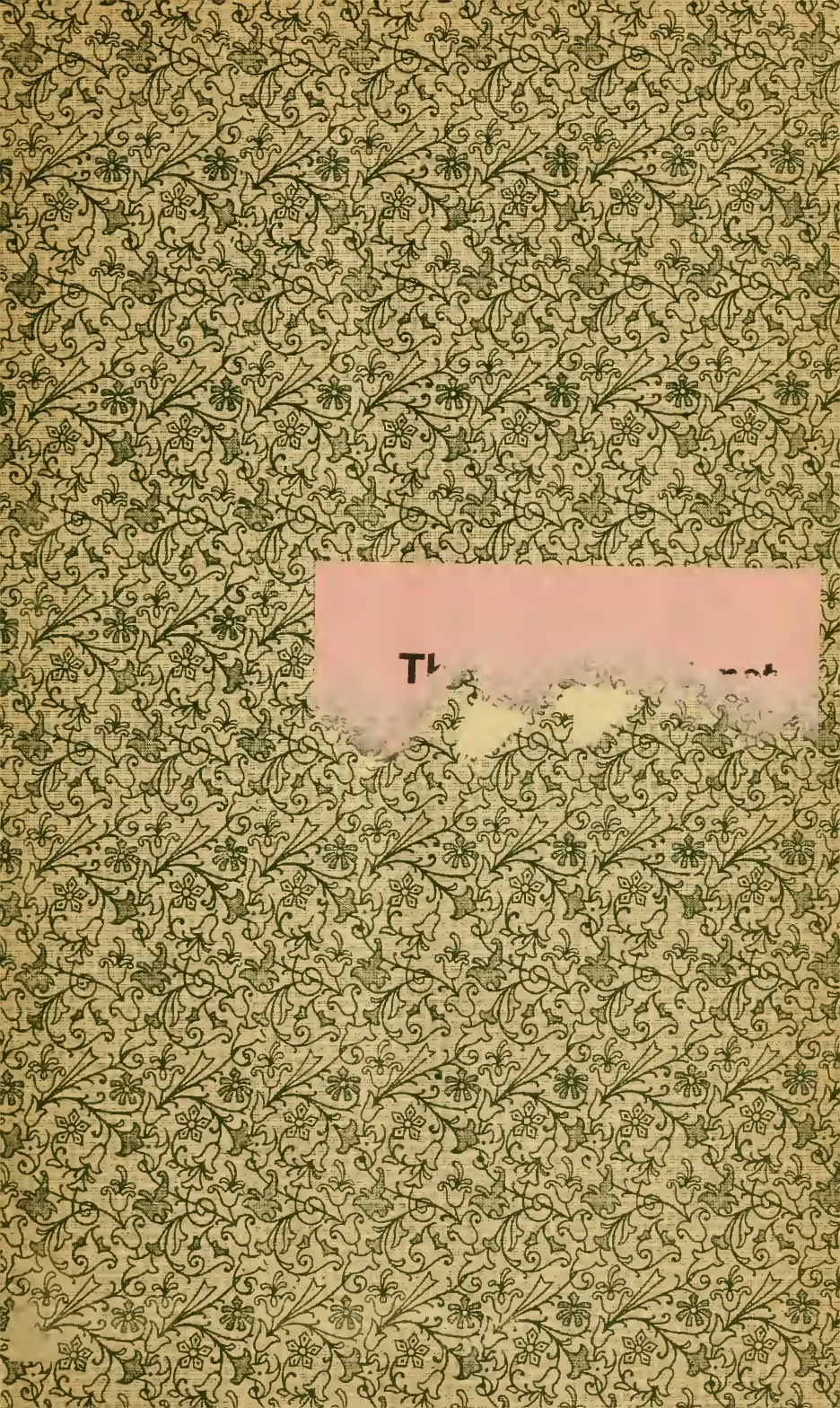

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TRANSACTIONS

—OF THE—

TWENTY-NINTH ANNUAL MEETING

—OF THE—

Medical Society of North Carolina,

AND CONJOINT SESSION OF THE

North Carolina Board of Health,

—HELD IN—

CONCORD, MAY 9th–11th, 1882.

WILMINGTON, N. C.:
JACKSON & BELL, WATER-POWER PRINTERS,

1883

MINUTES

—OF THE—

TWENTY-NINTH ANNUAL MEETING

—OF THE—

MEDICAL SOCIETY OF NORTH CAROLINA.

FIRST DAY—MORNING SESSION.

CONCORD, N. C., May 9th, 1882.

The Medical Society of the State of North Carolina assembled at the Court House in Concord, N. C., at 10 A. M., Tuesday, May 9th, 1882. The President, Dr. Thomas F. Wood, called the meeting to order.

Prayer was offered by the Rev. W. S. Creecy, of Concord.

The address of welcome was made by Mr. Richard C. Puryear, of Concord, as follows :

Mr. President and Gentlemen of the Medical Society :

Representing its citizens, I, on this occasion, extend to you the welcome and hospitalities of our town. Knowing, as we well do, how, through centuries of patient, toilsome and ofttimes most self-sacrificing labor, you have, throughout the world's civilization developed and elevated one of the grandest, if not the grandest of all sciences. I, in the name of my townsmen, in the name of science, in the name of moral culture, and in the name of humanity, extend to you, not only a most cordial welcome into our midst, but also a God-speed in the continued prosecution of those labors, the results of which are the physical and moral elevation of one common humanity.

COMMITTEE ON CREDENTIALS.

The Committee on Credentials were appointed as follows : Dr. Eugene Grissom, Dr. J. L. Henderson, Dr. J. H. Tucker.

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The Secretary called the roll, and the following gentlemen answered to their names :

Dr. N. J. Pittman, Tarborough ; Dr. H. W. Faison, Faison ; Dr. A. Holmes, Clinton ; Dr. J. M. Henderson, Concord ; Dr. P. E. Hines, Raleigh ; Dr. M. Whitehead, Salisbury ; Dr Eugene Grissom, Raleigh ; Dr. Charles J. O'Hagan, Greenville ; Dr. J W. Jones, Wake Forest ; Dr. W. W. Gaither, Charlotte ; Dr. Thomas F. Wood, Wilmington ; Dr. P. A. Barrier, Mt. Pleasant ; Dr. G. G. Smith, Concord ; Dr. J. R. McCorkle, Mooresville ; Dr. H T. Bahnson, Salem ; Dr. W. T. Ennett Burgaw ; Dr G. Gillett Thomas, Wilmington ; Dr. A. G. Carr, Durham ; Dr. J. M. Hadley, La Grange ; Dr. Joseph Graham, Charlotte ; Dr. J. L. Henderson, Mt. Pleasant ; Dr. John Fink, Concord ; Dr. W. H Lilly, Concord ; Dr. T. D. Haigh, Fayetteville ; Dr. W. C. Murphy, South Washington ; Dr. Geo. W. Long, Graham ; Dr. R. H. Lewis, Raleigh ; Dr. Geo. W. Graham, Charlotte ; Dr. J. D. Roberts, Goldsborough ; Dr. W. R. Wilson, Townesville ; Dr. H. M. Alford, Greensborough ; Dr. A. M. Lee, Clinton ; Dr. J. H. Tucker, Henderson ; Dr. Paul B. Barringer, Charlotte ; Dr. I. Wellington Faison, Fulton ; Dr. A. W. Knox, Raleigh ; Dr. Charles M. Glenn, Greensborough ; Dr. L. M. Powers, Plymouth ; Dr. J. L Nicholson, Richlands ; Dr. M. Pool, Salisbury ; Dr. R. A. Hauser, Bethlehem ; Dr. J. W. Moose, Mt. Pleasant ; Dr. J. A. Reagan, Weaverville ; Dr. J. Anderson, Callahan ; Dr. E. Crowell, Lincolnton ; Dr. T. A. Crowell, Monroe ; Dr. R. L. Payne, Jr , Lexington ; Dr. Theo. F. Meisenheimer, Big Lick ; Dr. T. F Pharr, Concord ; Dr. W. L. Reagan, Ivy ; Dr. H. B. Weaver, Weaverville.

The Chairmen of the Committee on Credentials announced that any gentlemen present desiring to join the Society would report at once to the Committee.

The President announced the following

COMMITTEE ON FINANCE.

Dr. G. G. Thomas, Wilmington ; Dr. J. D. Roberts, Goldsborough ; Dr. J. A. Reagan, Weaverville.

RESTORATION OF THE NAME OF AN HONORARY MEMBER.

Dr. Grissom called the attention of the Society to the fact that the name of Dr. J. D. Bellamy, of Wilmington, an Honorary,

has by some error been omitted from the published list. He moved that it be restored which was unanimously agreed to.

CORRESPONDENCE FROM THE NEW HANOVER COUNTY MEDICAL ASSOCIATION.

Dr. G. G. Thomas, of Wilmington, presented the following correspondence from the New Hanover County Medical Association :

WILMINGTON, N. C., April 26th, 1882.

To the Medical Society of the State of North Carolina:

Appointed a committee for the purpose at a meeting of the New Hanover County Medical Association held on the 25th instant, we desire to direct your attention to an innovation in ethical law recently enacted by the Medical Society of the State of New York ; and we invoke such action on your part as will lead to its repudiation by the American Medical Association.

The article to which reference is made is as follows :

" Members of the Medical Society of the State of New York and of the medical societies in affiliation therewith may meet in consultation legally qualified practitioners of medicine. Emergencies may occur in which all restrictions should, in the judgment of the practitioner, yield to the demands of humanity."

In the State of New York any person having a diploma, by the mere act of registration, becomes a " legally qualified practitioner." There is thus let loose upon its citizens a class of men, whose tenets are opposed to those of regular medicine, consultation with whom is interdicted by the Code of Ethics of the American Medical Association.

In consequence of the comparatively few legally qualified medical men and the paucity of irregular practitioners, the first clause is, except in one or two localities, practically inapplicable to North Carolina. It is the principle involved which we would have you scrutinize and condemn.

The rule enunciated by the American Medical Association, Art. IV, Sec. 1, appears to us to be founded upon correct reasoning. It is as inconceivable that a regular practitioner and one of an exclusive school should concur upon a plan of treatment for an invalid as that a Christian and a Voudoo priest should arrange conjointly a course of devotional exercises. Their belief is dissimilar. Should

they agree one necessarily becomes a convert to the opinions of the other and being thus devotees at the same shrine they may and ought to fraternize. If, however, while adhering to their respective doctrines, they should make a pretence of fraternization they would be guilty of, (term it which you please,) dissimulation—bad morals—unethical conduct.

The second clause appears more objectionable, if possible, than the first, since consultation is made mandatory rather than optional in certain contingencies. The assumption upon which the precept is founded is that an emergency may demand a sacrifice of truth. The premise being false the argument fails. If the premise were true it would not, in our opinion, apply for the reason that we cannot conceive an emergency where it would be impracticable to assume the position that we are willing to render professional assistance when required, but that we cannot do violence to our moral sense by assuming to consult with persons, to agree with whom, is to imperil, or, rather, to sacrifice our principles.

Hoping that we have succeeded in impressing upon you the importance of arresting this heresy in its incipiency and that your deliberations, in their manifold capacity, may be characterized by justice, moderation and a love of truth, we beg leave to subscribe ourselves, Very respectfully,

WM. J. LOVE,
GEO. GILLETT THOMAS,
F. W. POTTER,
W. W. LANE,
} Committee.

It was moved by Dr. J. A. Reagan that the report of the New Hanover Medical Association be referred to a Committee of three. Carried.

The following committee was appointed : Dr. W. R. Wilson, Dr. J. L. Nicholson, Dr. T. D. Haigh.

REPORT OF THE COMMITTEE ON THE CORRESPONDENCE OF THE NEW HANOVER COUNTY MEDICAL ASSOCIATION ON MEDICAL ETHICS.

Your committee to whom was referred the communication from the New Hanover County Medical Association in regard to the recent action of the New York Medical Society respectfully offer the following resolution :

Resolved, We hereby reäffirm our strict adherence to the Code of Ethics of the National Medical Association and request our delegates to its next meeting to further all efforts that may be made in that Association to compel its members to a strict adherence to the mandates of our Code of Ethics.

CORRESPONDENCE OF SECRETARY.

Letters were received from the following gentlemen regretting their inability to be present :

Vice-President, Dr. D. J. Cain, Dr. S. S. Satchwell, Dr. R L. Payne, Dr. Duncan M. Patterson, Dr. Frank Duffy, Dr. Charles Duffy.

A complimentary invitation from the citizens of Concord to be present at an entertainment on Thursday night was accepted.

PARTIAL REPORT OF THE COMMITTEE ON CREDENTIALS.

The Committee on Credentials present this partial report, and beg leave to recommend for membership in this Society the following gentlemen :

Dr. R. H. Morrison, Jr., Shelby.
" P. A. Barrier, Mt. Pleasant.
" C. W. Woollen, Randleman, Randolph County.
" W. A. Woollen, Randleman, Randolph County.
" Robert S. Young, Matthews, Mecklenburg County.

EUGENE GRISSOM,
J. L. HENDERSON, } Committee.
J. H. TUCKER,

Adjourned to meet at 2½ o'clock.

AFTERNOON SESSION—FIRST DAY.

The Society was called to order promptly at 2½ o'clock.

REPORT OF THE COMMITTEE ON FINANCE.

Your Committee on Finance beg leave to report that they have carefully examined the books of the Treasurer and find his account correct. They would suggest, however, that he shall file with his annual statement of the financial condition of the Society all of his

vouchers and evidences of credit, to avoid, what their absences might cause, troublesome delay.

To amount on hand June 2d.....$474 85
To amount mailed by members..... 145 00

Total.....$619 85

By amounts paid for Transactions, postage and mailing, Secretary's fees and Treasurer's fees Incidentals, and Society stamps.....$474 85

Leaving balance in Treasury.....$145 00

Your Committee respectfully urge that all members whose arrearages have exceeded three years dues shall be notified by the Treasurer, and if they fail to respond in 30 days, that they shall cease to be members of this Society, and their names be erased from the Revised Roll.

We recommend that the fees of the Treasurer and Secretary be respectively $50 00 and $100 00 as formerly, and that the per capita tax be $2 00.

GEO. GILLETT THOMAS,
J. A. REAGAN,
J. D. ROBERTS,
} Committee.

REPORTS OF CHAIRMEN OF SECTIONS.

Report of the Chairman of Section on Pathology and Microscopy —The Chairman of this Section, Dr. H. W. Lilly, of Fayetteville, being absent, it was read by the Secretary, Dr. Picöt.

On motion of Dr. Holmes the report was referred to the Committee on Publication.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Dr. A. W. Knox, of Raleigh, Chairman of the Section on Obstetrics and Gynecology read his report. It was referred to the Committee on Publication.

Dr. Grissom said he was very much instructed by Dr. Knox's exhaustive paper, but more particularly was he interested in the report of the case of recovery from insanity, after ovariotomy. He would like to enquire of Dr. Knox if the operation was directed especially to the cure of insanity. It was a matter of great moment to

collect and compare and analyze all cases of ovariotomy, oöphorectomy, &c., for the radical relief of diseases of the mind.

Dr. Knox replied from memory that he believed that the ovariotomy was not undertaken for the relief of insanity; but that the ovariotomy being necessary, was resorted to, and with the recovery of the patient from the operation, her reason was restored.

REPORT OF THE CHAIRMAN OF THE SECTION ON THERAPEUTICS AND MATERIA MEDICA.

Dr. George G. Thomas, of Wilmington, Chairman of the Section on Materia Medica made his report.

Dr. Haigh remarked upon the merits of this report, the amount of discriminating research exhibited in it, and moved that it be referred to the Committee on Publication. Carried.

The President announced that the annual address by Dr. A. W. Knox would be delivered in the Court House to-morrow, Wednesday night, at 8½ o'clock, and the citizens of Concord were cordially invited to attend.

He also announced that the conjoint session of the North Carolina Board of Health with the Society would take place on Wednesday morning immediately after the disposal of the usual order of the day, and that the annual essay by Dr. W. P. Beall, of Greensborough, being upon State Medicine, would be set apart for an early hour of the session.

SECOND DAY—MORNING SESSION.

May 10th, 1882.

The Society was called to order by the President, Dr. Wood, at 9½ o'clock.

Dr. Knox moved that Dr. Charles W. Dabney, Jr., be invited to a seat during the sessions of the Society. Dr. Dabney is the Chemist of the State of Agricultural Department, and had not only served our auxiliary, the North Carolina Board of Health in his official capacity, but had shown individual interest in the work in which we are engaged.

The motion carried, and Dr. Dabney was invited to a seat in the Society.

Dr. Dabney remarked in substance :

Gentlemen :—I thank you for your kind and complimentary invitation to take part in your proceedings. While I am not a Doctor of Medicine, and my duties are confined entirely to Chemistry, an auxiliary branch of medical science, yet I feel an abiding interest in the great work you are doing in North Carolina.

Although chemistry and medicine, are now unfortunately too much separated for the practical good of the profession of medicine, yet there is really a strong bond of union which we might make mutually advantageous.

PARTIAL REPORT OF COMMITTEE ON CREDENTIALS.

Through the Chairman of Committee on Credentials, the following gentlemen are recommended for membership, having successfully passed their examination before the Board of Medical Examiners :

Dr. J. R. Irwin, Alexandriana, Mecklenburg County.
" J. H. McBrayer.
" Robert S. Young.
" M. C. Hunter.
" A. R. Wilson, Greensborough, Guilford County.
" Kemp P. Battle Jr., Chapel Hill, Orange County.
" Geo. S. Lloyd, Tarborough, Edgecombe County.
" John B. Gunter, Durham, Durham County.
" C. F. Anderson.
" J. T. Strickland, Bliss, Surry County.

Respectfully submitted,

EUGENE GRISSOM,
JOHN L. HENDERSON,
J. H. TUCKER,
} Committee.

Dr. W. T. Ennett, of Burgaw, called the attention of the Society to the violation of the Code of Ethics by Dr. A. D. Lindsay, of Kernersville, in that the said Dr. Lindsay had put forth a hand bill advertising a medicinal preparation. He believed that the letter and spirit of the law had been violated by Dr. Lindsay, and moved that the whole matter be referred to the Board of Censors.

Dr. G. G. Smith seconded the motion.

Dr. Whitehead said that the proper course would have been for this matter to have been brought to the attention of the Board of Censors but not in open meeting, in order to avoid taking up the time of the Society in the discussion which usually ensued.

Dr. O'Hagan member of the Board of Censors said : The proper course of action in such violations of the Code, was for the auxiliary Society of the County in which the person resides, to take cognizance of it and report to the Society their action. If they could not agree upon a verdict, or if the accused saw fit to appeal, then it would be in order for the case to come before the Board of Censors. He thought that there was a lack of firmness, generally, upon the part of county societies in dealing with offenders, but it was very obvious that both the Society and the accused could act more justly by fully investigating these cases in the vicinity where the the accused lived. As no member of Forsyth County Association was present, he moved that the whole matter be laid on the table, and he would claim the privilege of calling it up at the afternoon session, and in the meantime he would make further investigation.

Dr. J. P. Beall, regular Essayist, read an instructive and earnest paper on the subject of *Preventive Medicine.*

The paper of Dr. Beall was referred to the Committee on Publication.

CONJOINT SESSION OF THE SOCIETY AND THE NORTH CAROLINA BOARD OF HEALTH.

The hour (11½ o'clock A. M.) having arrived, the President of the Society called on Dr. M. Whitehead, of Salisbury, the President of the Board of Health, to preside over the meeting.

Dr. Whitehead explained that it was the custom of the Society to hold these conjoint sessions, in order that the work of this auxiliary body might be properly brought before the members present. It was important that all should be acquainted not only with the work already done, but what was proposed to be done, that this struggling auxiliary of the Society should receive a proper support.

The Essay of Dr. Beall was a very excellent introduction to this session, and he would now ask the attention of the Society to the yearly report of the Secretary of the Board, Dr. Thomas F. Wood.

The annual report of the Secretary was read, and referred to the Committee on Publication.

The Secretary explained that by a resolution of Dr. W. W. Gaither at the Asheville meeting, in 1881, the duty of appointing a committee from every county in the State to canvass in the interest of prospective legislation for the Board of Health, devolved on him in his double capacity of President of the Society and Secretary of Board of Health. He learned though, that the extra session of the Legislature, in March, 1882, which was contemplated by the Governor, was not concurred in by his council, and therefore the appointments were delayed until this meeting.

He furthermore desired to announce that if any gentleman receiving his appointment as Committeemen would not be able to undertake the work in earnest, that he would signify this fact, and that a successor could be appointed without delay.

The following is the list of

COMMITTEEMEN TO ACT AS CANVASSERS IN THE INTEREST OF FUTURE LEGISLATION FOR THE NORTH CAROLINA BOARD OF HEALTH.

Alamance	Dr. Geo. W. Long.
Alexander	
Alleghany	Dr. John L. Smith.
Anson	" Simpson Jones.
Ashe	" James Wagg.
Beaufort	" John McDonald.
Bertie	
Bladen	Dr. Jas. S. Robinson.
Brunswick	" W. G. Curtis
Buncombe	" W. L. Hilliard.
Burke	
Cabarrus	Dr. W. H. Lilly.
Caldwell	
Camden	Dr. J. H. Pool.
Carteret	" Manney.
Caswell	
Catawba	Dr. George H. West.
Chatham	" L. A. Hanks.
Cherokee	" Patton.
Chowan	" R. H. Winborne.
Clay	" Killyan.
Cleveland	" J. C. Gidney.
Columbus	" M. R. Morrison.
Craven	" Frank Duffy.
Cumberland	" T. D. Haigh.

Currituck	
Dare	
Davidson	Dr. R. L. Payne.
Davie	
Duplin	Dr. L. Hussy.
Edgecombe	" L. L. Staton.
Forsyth	" H. T. Bahnson.
Franklin	" E. S. Foster.
Gaston	" E. B. Holland.
Gates	
Graham	
Granville	Dr. W. R. Wilson.
Greene	" W. C. Galloway.
Guilford	" W. P. Beall.
Halifax	" Isaac E. Greene.
Harnett	
Haywood	Dr. G. D. S. Allen.
Henderson	" J. L. Edgerton.
Hertford	" R. P. Thomas.
Hyde	
Iredell	Dr. Thos. E. Anderson.
Jackson	" J. M. Chandler.
Johnston	" R. J. Noble.
Jones	
Lenoir	Dr. Henry Tull.
Lincoln	" J. M. Lawing.
Macon	" S. H. Lyle.
Madison	" W. L. Reagan.
Martin	" T. S. Burbank.
McDowell	
Mecklenburg	Dr. J. Graham.
Mitchell	
Montgomery	Dr. W. A. Simmons.
Moore	" A. V. Budd.
Nash	" David N. Sills.
New Hanover	" J. C. Walker.
Northampton	" V. S. McNider.
Onslow	" J. L. Nicholson.
Orange	" T. B. Harriss.
Pamlico	
Pasquotank	Dr. Wood.
Pender	" W. T. Ennett.
Perquimans	
Person	Dr. R. S. Baynes.

Pitt ..... " C. J. O'Hagan.
Polk .....
Randolph .....
Richmond ..... Dr. J. M. Covington.
Robeson ..... " R. F. Lewis.
Rockingham .....
Rowan ..... Dr. J. J. Summerell.
Rutherford .....
Sampson ..... Dr. A. Holmes.
Stanly ..... " T. F. Meisenheimer.
Stokes ..... " M. D. Phillips.
Surry .....
Transylvania ..... Dr. C. W. Hunt.
Tyrrell .....
Union ..... Dr. Isaac H. Blair.
Wake ..... " R. H. Lewis.
Warren ..... " Geo. A. Foote.
Washington ..... " L. M. Powers.
Watauga ..... " W. B. Council.
Wayne ..... " J. D. Roberts.
Wilkes .....
Wilson ..... Dr. John K. Ruffin.
Yadkin ..... " L. G. Hunt.
Yancey .....

No other business appearing before the Conjoint Session it was adjourned *sine die*, and the regular session of the Society resumed.

Responding to the call by the President for voluntary papers. Dr. R L. Payne, Jr., of Lexington, read one entitled "The Cause of Organic Stricture, with Some Suggestions for Treatment."

Dr Pittman, of Tarborough, made remarks on the value of slippery elm bougies for the dilatation of stricture. These were easily made, and should be nicely finished. After soaking them a short time in water, they were ready for use.

Dr. A G Carr, of Durham, in referring to the statement by Dr. Payne that he was not prepared to write about the electrolytic treatment of stricture, said that he had become quite interested on this point, and that he enquired of Dr. E. L Keyes, of New York city, as to his experience. He was informed that he (Dr. K.) had employed it, and he at first thought it was successful, but he afterwards abandoned it, as only affording temporary relief, the stricture always returning.

By the President: It is not proper that such a contribution to the surgery of stricture should be received without a word of commendation from the Society. There were few more important subjects which engage us practically than the Surgery of Stricture, and Dr. Payne's view are characterized by an intelligent conservatism.

The mass of information which had accumulated upon the subject of stricture in the last ten years, was more important than of several decades preceding. But in this country the current of surgical opinion seemed to be dominated by one and the other teacher successively, an indication that the whole practice of urethral surgery was in a stage of transformation.

Prof. Otis, of New York, had made valuable contributions to the literature, as well as to the science and art of the surgery of stricture, and has succeeded in impressing the American profession with his views to a very considerable extent; but after all it is questionable whether he has done more for the surgery of stricture, by his teachings, than for lithotrity. It was his demonstrations of the dilatability of the urethra that paved the way for Bigelow's rapid lithotrity, and if no other good result is effected, this alone would entitle him to a conspicuous place in this department of surgery.

But the medical profession yet remained to be convinced upon the relative merits of urethrotomy and forcible and gradual dilatation, as these methods are still undergoing trial. As pointed out in Dr. Payne's paper, all of these methods have in certain cases, their proper place, but do what we will, most strictures of small calibre will require dilatation during a very long period, if not for a life time. All treatment has its defects, as is evidenced by the numerous relapses. It is evident, though that a discriminating and judicious selection of some one of the methods now in vogue is capable of producing more satisfactory results, than by the old plan of gradual dilatation by means of gum bougies.

The recurrence of the gleety discharge in patients who have been operated upon, and which causes so much anxiety to the patient and disappointment to the doctor, is many times the result of the very operative procedures we adopt. For instance, we divulse or cut through a stricture and dilate up to the maximum calibre of the urethra as indicated by the measurement established by Otis. The patient is instructed to use a sound at stated

intervals. Now most persons suffering with stricture have a morbid anxiety as to the possibility of maintaining the proper calibre, and also as to every discharge which may show itself. His attention is constantly drawn to the urethra, and in his anxiety he resorts to the sound as the source of relief. For, adopting the current doctrine that a gleety discharge is the index of a stricture, he resorts to the sound to overcome it. He repeatedly passes the largest sound he has been instructed to use, and so irritating the prostate by these frequent stretchings, he brings on a prostatic discharge, which is set down as the discharge of gleet. This is not an exaggerated statement and has occurred many times under my observation.

Dr. Payne has dwelt instructively on one of the methods of dilatation which has met with great success in my hands. He associates the name of Dr. Brinton with the method of gradually dilating tight and tortuous strictures, by means of filiform bougies. However, priority is an ever recurring question and has no practical bearing. The method is lucidly described by Mr. Reginald Harrison, of Liverpool, Eng., (*Lectures on Surgical Disorders of the Urinary Organs*, p. 70, 2d Ed.) from whose book I first learned it. It consists in passing filiform bougies (usually made of whale-bone) into the urethra. If it is remembered that strictures are sometimes eccentric with the opening, not in the axis of the urethra, the advantage of a fine and flexible instrument as an explorer and a guide, is at once appreciated. If the first bougie does not pass readily, it should be slightly bent to meet the emergency. The instrument makers prepare for us whalebone bougies twisted in various ways,—spiral, and at various angles, on one end, and straight on the reverse end. These are to be introduced in a rotary motion, or, as Mr. Harrison says, by "twizzling" them between the finger and thumb. Should the first one not pass, but stick in a lacuna or make a false passage, let it alone, and continue attempts at introduction, until finally all the false passage being closed there is but one direction for the bougie to take, and that directly through the only remaining opening. Now, after the bougie is cleverly engaged in the urethra all the others may be withdrawn, and this used as a guide whereby to enter the stricture with a dilator, or urethrotome. This whole subject though, has been so fairly treated by Dr. Payne that I must ask your pardon for saying so much about it. After sur-

veying the whole scope of urethral surgery, it seems to me that we owe more to the conservative practitioners who are open to conviction as to the good in all methods, rather than to the original man, whose horizon is shut in by the exclusion of all methods but his own.

It may be remarked, in conclusion, though, that the physician, who, in general practice, attains to a degree of success in the use of one particular set of instruments, whether it be by divulsion or urethrotomy, would be safer in cultivating the particular instrument in the field of his successes, rather than doing only half-way, the several methods about which he has no serious conviction.

As suggested by Dr. F. E. Daniel in the Mississippi Transactions, the busy country practitioner will find the employment of fiddle-strings an admirable substitute for whalebone sounds, in an emergency. It is only necessary to round off the ends of the cat-gut in the flame of a lamp, and rub off the charred end.

Another admirable assistance to the physician in the dilatation of stricture is the employment of a full head of urine. A stricture patient of mine recently, complained for some days after the weekly use of a No. 14 sound, found that he had an uncomfortable discharge. One night while taking his weekly hot bath, preparatory to dilatation he found that his sound was not at hand. His bladder was very full, and the hot water relaxed the parts so that he could with difficulty retain his water. He resisted though, and finally when he could no longer resist, he found that the force of the urine dilated his urethra as satisfactorily and more pleasantly than by the sound, as it was not followed by discharge. He has since used only this method. It is a rational way, at least, and if as declared by Sir Henry Thompson that the urethra is a valve having its open end at the vesico-urethral end, then dilatation from the natural direction would be from behind forwards, as in the hydrostatic method. There is nothing new in all this, nor is it devoid of danger in some cases, but it is well to consider all the means at our command in those emergencies which must occur to physicians practicing in the country.

Dr. Pittman moved the reference of Dr. Payne's paper to the Committee on Publication. Carried.

CONGENITAL ABSENCE OF THE EXTERNAL AUDITORY CANAL.

Dr. R. F. Lewis presented a negro boy for the examination of the Society, pointing out the congenital absence of the external auditory canal, and of the lobes of the ear.

Adjourned to meet at 2½ o'clock.

SECOND DAY—AFTERNOON SESSION.

Society called to order at 2½ o'clock. Dr. Thomas F. Wood, the President, in the chair.

The call for voluntary papers was responded to by Dr. Picöt, the Secretary, who read a report by Dr. R. H. Lewis, of Lumberton, of a "Case of Forcible Separation of the Right Arm from the Body."

Dr. Gaither could not agree with the reporter, that there was no shock. He did not think it possible to escape it after such an injury.

Referred to the Committee on Publication.

Dr. W. W. Gaither read a report of some miscellaneous cases occurring in his practice, which was referred as above.

RESIGNATION.

Dr. McL. Graham offered his resignation which was accepted.

The President announced the following committees:

COMMITTEE ON NOMINATIONS.

Drs. J. W. Jones, Wake Forest; W. H. Lilly, Concord; P. E. Hines, Raleigh; H. W. Faison, Faison; Geo. Gillett Thomas, Wilmington.

COMMITTEE ON ESSAYIST.

Drs. W. P. Beall, Greensborough; I. Wellington Faison, Fulton; J. M. Hadley, La Grange.

TYPHOID FEVER.

Dr. Charles J. O'Hagan introduced for discussion the subject of "Typhoid Fever, as Regards its Etiology and Treatment."

He said in substance. In Pitt and the adjoining counties in 1879 there was absolute freedom from malarial fever. In the entire valley of the Tar River there was less malarial fever than in the Valley of the Connecticut, if he could judge by the report of the Secretary of the Board of Health of that State. The following Spring we had an epidemic of *Influenza*, and from July to the present time, typhoid or typho-malarial fever has existed to some extent. He would like very much to hear from the members of the Society, their views on the etiology and treatment of typhoid fever. It seems to be the current opinion of the profession that it is probably due to the decomposition of animal matter. He could not believe that this theory was entirely true for he had known cases to occur in localities where there was no visible agent of this sort at work, and where there was good water and no sewage effluvia. The theory was not entirely satisfactory.

It is the belief of some that malarial influences are antagonistic to typhoid fever, but this is not so, for the disease frequently coëxist in the same localities side by side, and also seem to be mixed as in the so-called typho-malarial fever, This latter term he did not like. It was making a new disease of a really well-known one, common in all tide-water malarial regions.

The question of the communicability of typhoid fever was also a very important one. Is it contagious in any degree, he would ask ? There are various opinions on this subject ; and if we can determine its communicability by infection or contagion, means of isolation should be adopted. He had seen typhoid go through households and even entire settlements, but what the media of the disease were he had not settled in his mind. He thought that it was wise to prevent free communication of the well with the sick. To attend carefully to the hygienic surroundings, as much for the sick as for the well.

The diagnosis of typhoid is somewhat difficult in the early stages. All the continued fevers have a certain resemblance in the beginning. There was nothing new in the diagnosis, for the principles for our guidance are well laid down. Nevertheless, there are a large number of cases in which we see no lenticular abdominal patches, and still these cases present every other resemblance to typhoid. In his observation the disease never reaches its crisis until the twenty-first to twenty-eighth day.

As for the treatment, quinine fails to cut short the fever. Nothing is so serviceable in the reduction of temperature as the use of cold water. He employs water about the temperature of water freshly drawn from the well. It could be used by simple affusion, but he preferred the use of the wet pack. Tympany and diarrhœa are frequently troublesome. Opium was the thing to relieve the diarrhœa. As to the diet the patient should be confined rigidly to a course of nourishing fluids.

He had intended to present a paper on this subject, but had failed to do so, his remarks now were rather to draw forth information from the Society on the subject, than to offer anything new himself. When we consider that deaths from typhoid fever stand second or third in importance in our national death-rate, it seemed to him that the subject needed renewed study, in order to establish the etiology, and also to determine, if possible the means of prevention.

Dr. A. G. Carr said in substance. The diagnosis of fevers in general had always perplexed him. One teacher will say that the lenticular rose-colored spots are the only pathognomonic signs of typhoid, while others thought that a failure to find these spots would not necessarily exclude it from such a diagnosis, many cases going through their course without any such signs. He called those cases typhoid only, that exhibited the rose-colored spots, and consequently he had seen very few genuine ones. Some authors teach that the diurnal variation of the thermometer is a sufficient guide, but he thought that if thermometry was to be a guide, it was to be determined by our future knowledge on the subject, rather than by what we at present know.

Dr. H. W. Faison believed that typhoid fever must have local peculiarities. He was tempted to believe that typhoid fever in North Carolina differed from the same disease in New York. So in pneumonitis. In his section of the State the malarial impression is so strong that it failed to show that clear, classical outline given in the text-books. He believed that the thermometer was an accurate means of diagnosis as well as of prognosis.

The treatment of the disease could not be laid down in inflexible rules. It was necessary day by day to meet the exigency of the day. There was but one rule that was undeviating, and that was to see that the patient is properly nourished. For this purpose nothing excelled animal broths and milk.

Dr. J. D. Roberts, of Goldsborough, thought that sufficient stress had not been laid upon the cause of typhoid by the use of polluted drinking water. He cited a clear instance in which he had treated typhoid fever in a household from using foul water from a well.

Dr. O'Hagan did not deny that the pollution of drinking water was potent to engender the disease, but he was of the opinion that the detection of the particulate element has not yet been, and may be, never would be accomplished. But he could speak more confidently about the communicability of the disease; he did not see how this point could be doubted.

Dr. J. W. Jones, of Tarborough, said we can not be very positive how the disease originates with our present knowledge. When we see much typhoid fever prevailing we see very little malarial fever. Some light is thrown on the subject by our ability to cure malarial fever with quinine, and our failure to accomplish anything by it in typhoid. In the fever we call typho-malarial we have gastric inflammation. The gastric symptoms are very prominent, but there is no disease of the intestinal glands. One thing he had noticed which he would mention incidentally, that patients affected with rheumatism are exempt from typhoid fever. How account for the typhoid fever in the mountains where the air and water are pure, and where there can possibly be no sewage influences. We are willing to accept the theory of sewage contamination for cities but that drives us to the invention of some other cause operating in the isolated mountain farm house.

Dr. Whitehead said that he considered the communicability of the disease under discussion (typhoid fever) by personal influence, as well established as any part in its history. In 1858 he had an exceptionally large experience in the disease, as it prevailed in Rowan, parts of Cabarrus, Iredell, Davie and Davidson counties, especially so on the large negro plantations on the Yadkin river. It could be traced from house to house and plantation to plantation by some one having nursed, helped to nurse or slept on the plantations where it then existed. In this way it was communicated until whole neighborhoods were down with the disease—scarce enough left to take care of the sick.

In all the white patients, without exception, the peculiar eruption could be found in from eight to twelve days. He believes it is

always present in typhoid fever, though sometimes very sparsely scattered over the chest and abdomen.

The mortality has not been great in Rowan county. The treatment expectants: great care being given to relieving the patient with proper food and stimulants. Quinine and cold sponging to control and reduce temperature.

He regarded the term typho-malarial fever as an unfortunate one, although it has been described by Dr. Woodward in a paper read before the International Medical Congress. We hear it used every day by well informed medical men who ought to know better. Is it possible that the specific typhoid and malarial poisons can work conjointly on the same individual? They never exist conjointly in the same subject. It is a new name for an old enemy. In many of the older works on the Practice of Medicine we will find it well described as adynamic remittent. It is a grave error to apply this term to severe cases of remittent fever or to speak of remittent fever "turning to typhoid." To have typhoid fever modified by a malarial element is another thing, but it does not become thereby a separate disease.

Dr. F. M. Henderson, of Concord, had under his charge in the First North Carolina Confederate Hospital, patients sick with camp fever, or typho-malarial fever. Post-mortem examinations revealed disease of the glands of Peyer and Brunner.

Dr. Reagan, of Weaverville, had no theory to advance as to the causation of typhoid fever. Of one thing he was certain the disease was contagious.

By the President: In closing this discussion he would remark upon one or two points. The nomenclature of the fevers had attracted the attention of writers for many years. No real refinement of diagnosis commenced until Louis pointed out the pathological differences between typhoid and typhus, and so established an advanced point in the whole system of nosology, in fact transferring nosology from the domain of speculation. Now typhoid is almost universally regarded as a specific fever, having a constant pathological entity in the disease of the intestinal glands. Thus Dr. George B. Wood calls it enteric fever, and Trousseau, dothinenteria, each term constructed to impress the predominant pathological lesion. Still some other authors had not been so willing to accept

whole and entire this naming, because they found it more convenient to comprehend all fevers whose characteristic feature is stupor, by a term signifying it. Thus, Dr. Thomas K. Chambers in his *Renewal of Life*, includes them all under the general designation of "Typh Fever." But as long as there is so little precision in our pathological studies, our nomenclature must be provisional Now it is not often that one sees a case of typhoid corresponding in all of its features to the classical account of the text-books. and this may be said of all diseases ; but there is a group of coarse but distinctive phenomena which serve to keep clearly in our minds the general features. The term typho-malarial fever may not be any better than the old term bilious-adynamic fever, but it expresses a generally received idea and was intended to show that the continued malarial fevers have a constant lesion of the intestinal glands. He was inclined to think the line of demarcation ought to be made at a different place. He believed that true enteric fever furnished immunity to the person attacked, against a subsequent attack, almost as surely as small-pox protected against a second attack. On the other hand the continued form of malarial fever afforded no such immunity. It was convenient to use the prefix *typho* to indicate the stupor attendant upon the disease, even if the intestinal lesion was constant. If typho-malarial was to be applied to all the fevers commencing as sharp remittents, and subsiding in a continued form, then the term was inaccurate. But there is without doubt a typhoid fever, having distinct marked malarial features and there is an adynamic bilious fever, which has no specific protective power, and for this we can reserve the name adynamic-malarial fever.

Of the cause of typhoid fever there was no uniformity of opinion. Teachers in the large cities think they see a causative element in sewage and the fæcal dejections of typhoid patients, while physicians in the country find it hard to accept this idea. In our Eastern counties we have a typhoid fever rarely agreeing with the classical description, and not recognizrd as contagious. This fever is the acclimating fever of the German population in Wilmington. It is not considered contagious, and there is no difficulty in getting nurses for patients attacked with it as easily as for other diseases. In the mountains, though, the disease is very serious, and so decidedly contagious that it often creates a panic in families, and

makes it difficult to get a nurse except from among those who have once had the disease. It would seem, therefore, that there is a material difference in the two fevers, and it would be difficult to admit that there is constant causative element in the Eastern and Western types of the fever. But as to a causation in disease, we know extremely little, and we are not much farther away from it in typhoid than other fevers. Filth, though, is a factor in all zymotic diseases. It either causes disease, or it intensifies it when it is established. Filthy surroundings in a solitary case of fever or diphtheria may only increase the reciptivity of the persons who are in the nearest contact with the sick, but whether this is all the harm resulting, or whether disease germs spring *de novo* from it, it is equally important to enjoin the strictest attention to hygienic surroundings.

Now, lastly, as to the diet of a typhoid patient. It is a common error to tax the stomach and intestinal digestion of the typhoid patient with too much nourishment. It stands to reason that the idiosyncrasy of a given patient's stomach is not overcome by the typhoid state, and that if any given article of food does not agree with him when he is well, it is not to be expected to answer for him when he is sick. Feeding with milk requires much judgment. It cannot be denied that milk is the nearest approach we have to a perfect nourishment, but it would be folly to give even milk to a typhoid patient with whom it did not agree when he was well. Sir Wm. Jenner pointed out some time ago that milk was not the best diet for typhoid patients. One pint of rick milk was equal to a mutton chop and as hard to digest. This does not signify that milk is to be condemned as a diet but to be given with discretion. Water and lime water could often be added with advantage, as our typhoid patients generally get far too little water, and lime-water tends to prevent the formation of solid curds in the stomach.

Peptonized food is attracting much attention It is a rational way of giving nourishment. The design is to introduce a food so nearly resembling natural peptone as to tax the stomach and duodenum the very least. Expensive preparations are on the market, but the physician could easily extemporize it, by the artificial digestion of meat and meat juice with pepsin and pancreatin, the minute directions for which are given in Dr. Robert's (of Manchester,

Eng.,) famous lectures, "Preparation and Use of Artificially Digested Food."

Another article of diet, beef tea, an old one by a new method, is thus prepared. Mince lean juicy beef and place it in a water bath, the temperature of which is not raised above the point that the finger could bear a moment. Digest it for an hour carefully not exceeding 110° F. Then put the meat thus prepared in a small fruit or curd press, and squeeze out all the juice. In this way all the muscle juices and albumin are separated, giving a product resembling blood, more than the beef-tea made by the old process of digesting at the boiling point, and probably much more nutritious.

Adjourned to meet at 8½ o'clock.

NIGHT SESSION—SECOND DAY.

ANNUAL ADDRESS.

The Society assembled in the Court House at 8½ o'clock to listen to the Annual Address by Dr. A. W. Knox, of Raleigh. The citizens of Concord responded to the invitation to be present, by a full house. The subject of the Address was VACCINATION.

The history of the practice was traced from the time anterior to Jenner's discovery. He mentioned the historical fact of Farmer Benjamin Jestey, of Downshay, England, following the tradition of his neighborhood, inoculated his family with cow pox for the prevention of small-pox. But he did not succeed in impressing the people of his time sufficiently to establish the practice. It was due to the genius of Jenner to interpret the meaning of the exemption of milk-maids from small-pox who had taken the cow-pox from the cattle. He it was, who in 1796 actually demonstrated the practice by taking the lymph from the hand of a milk-maid, inoculating his own son, and then afterwards proving by the crucial test of small-pox inoculation, the absolute protection obtained by the vaccination. A group of his early cases was brought together in his first great work entitled "An Enquiry into Variolæ Vaccinæ," and by this touch of a master-hand the benificent system was given to the world.

The speaker dwelt upon the protective power of vaccination, proving by statistics what immense good had been done by means of it.

He also showed how foolish and wrong the anti-vaccination movement was. He referred to Bergh's insane tirade in the *North American Review*, and the incisive and conclusive reply of Dr. H. A. Martin. He discussed the propriety of compulsory vaccination, and the difficulty of accomplishing it, in communities where there are large numbers of negroes.

The address was well conceived, and delivered in a clear impressive manner, eliciting from time to time the applause of the audience.

At the conclusion of the address, it was moved by Dr. A. Holmes that the thanks of the Society are due and are hereby tendered to Dr. Knox for his address and that it be referred to the Committee on Publication. Carried.

Adjourned to meet Thursday morning at 9½ o'clock.

THIRD DAY—MORNING SESSION.

The Society was called to order promptly at 9½ o'clock.

Dr. Henderson from the Committee on Credentials reported the name of Dr. Gaston Bradshaw, of Lexington, for membership. Adopted.

The Chair made the following announcement :

CHAIRMEN OF SECTIONS.

Dr. R. L. Payne, Jr., of Lexington, *Surgery.*

" H. B. Furgerson, of Littleton, *Therapeutics and Materia Medica.*

Dr. Geo. W. Long, of Graham, *Practice of Medicine.*

" F. A. Crowell, of Monroe, *Microscopy and Pathology.*

" J. M. Hadley, of La Grange, *Obstetrics and Gynecology.*

" A. G. Carr, of Durham, *Diseases of Children.*

REPORT OF THE DELEGATE TO THE BRITISH MEDICAL ASSOCIATION AND THE INTERNATIONAL MEDICAL CONGRESS.

Dr. N. J. Pittman, of Tarborough, entertained the Society with an account of his visit to the International Medical Congress, held in London, and also the British Medical Association held in Ryde, Isle of Wight, in 1881.

On motion of Dr. Bahnson the report was referred to the Committee on Publication, with the thanks of the Society.

Dr. H. W. Lilly, of Concord, exhibited a case of *Encephalocele* in the person of a little girl. He spoke of the nature of the case, of the strong temptation to interfere surgically for its relief, and also the great dangers attending such interference. He also read letters from Drs. Gross, A. C. Post and Van Buren, advising that in some cases the elastic bandage might be successfully used to accomplish gradual constriction, but the propriety of any interference in this case was very doubtful.

The Committee on Nominations made the following report:

For President:

Dr. J. K. Hall, of Greensborough.

Vice-Presidents:

Dr. A. W. Knox, Raleigh.
" J. M. Hadley, La Grange.
" E. S. Foster, Louisburg.
" John Whitehead, Salisbury.

Treasurer:

Dr. A. G. Carr, Durham.

Secretary:

Dr. L. Julien Picöt, Littleton.

Orator:

Dr. W. R. Wilson, Townesville.

DELEGATES TO AMERICAN MEDICAL ASSOCIATION.

Dr. R. L. Payne, Lexington.
" Eugene Grissom, Raleigh.
" N. J. Pittman, Tarborough.
" H. T. Bahnson, Salem.
" J. W. Jones, Tarborough.
" Thomas F. Wood, Wilmington.
" R. H. Lewis, Raleigh.
" G. G. Smith, Concord.
" Paul B. Barringer, Charlotte.
" L. Julien Picöt, Littleton.

DELEGATES TO VIRGINIA MEDICAL ASSOCIATION.

Dr. A. M. Lee, Clinton.
" R. Lee Payne, Jr., Lexington.

Dr. W. C. Murphy, South Washington.
" Willis Alston, Littleton.
" John Wilson, Milton.

DELEGATES TO THE SOUTH CAROLINA MEDICAL ASSOCIATION.

Dr. W. J. H. Bellamy, Wilmington.
" S. B. Jones, Wadesborough.
" D. J. Cain, Asheville.

COMMITTEE ON PUBLICATION.

Dr. Thomas F. Wood, Wilmington.
" G. Gillett Thomas, Wilmington.
" L. Julien Picöt, Littleton.
" H. W. Lilly, Fayetteville.

OBITUARY COMMITTEE.

Dr. Allman Holmes, Clinton.
" J. M. Henderson, Concord.
" J. M. Baker, Tarborough.

BOARD OF CENSORS.

Dr. Charles J. O'Hagan, Greenville.
" N. J. Pittman, Tarborough.
" J. J. Summerell, Salisbury.

Respectfully submitted,

J. W. Jones,
W. H. Lilly,
P. E. Hines,
H. W. Faison,
G. G. Thomas,
} Committee.

The report was approved and adopted.

PROPOSED AMENDMENT OF BY-LAWS.

Dr. Walter C. Murphy introduced the following amendments to the By-Laws which lie over under the rules, until 1883:

RULES OF ORDER FOR N. C. MEDICAL SOCIETY.

First Day—Morning Session.—1st. The President, or in his

absence, one of the Vice-Presidents, shall call the Society to order, and Request a Resident Clergyman to Open the Proceedings with Prayer.

2d. Address of Welcome.

3d. Calling Roll of Members.

4th. Appointment of Committee to Examine Credentials of Delegates.

5th. Appointment of Committee on Finance.

6th. Resolutions, or Motions Introducing New Business.

7th. Presidential Address.*

First Day—Afternoon Session.—1st. Report of Chairman of Section on Surgery. Discussion.

2d. Report of Chairman of Section on Obstetrics and Gynecology. Discussion.

3d. Report of Chairman of Section on Pathology and Microscopy. Discussion.

Second Day—Morning Session—1st. Reading of Essay by Annual Essayist.

2d. Conjoint Session of North Carolina State Medical Society with State Board of Health.

3d. Brief Volunteer Papers may be Read and Discussed.

Second Day—Afternoon Session—1st. Report of Chairman of Section on Practice of Medicine. Discussion.

2d. Report of Chairman of Section on Materia Medica and Therapeutics. Discussion.

3d. Announcement of Committee on Nominations.

4th. Announcement Committee to Appoint Essayist.

5th. Announcement by the President of Time and Place for the Delivery of the Annual Oration.

Third Day—Morning Session—1st. Unfinished and Miscellaneous Business.

2d. Reading of Volunteer Papers.

3d. Oral Communications may be Made and Discussed.

Third Day—Afternoon Session—1st. Report of Committee on Nominations.

*The suggestion was made by the presiding officer that the President's Address was so often of the nature of a message on the policy of the Society, and an outline of new work, that it would properly be put at the beginning instead of the close as heretofore.

2d. Report of Committee on Annual Essayist.
3d. Installation of Officers.
4th. Selection of place for next Annual Meeting.
5th. Unfinished and Miscellaneous Business.
6th. Adjournment.

The Secretary read a letter of resignation from Dr. W. W. Gaither which was accepted.

Dr. Knox moved that the case of Dr. A. D. Lindsay, brought to the attention of the Society by Dr. Ennett, be taken up by the Board of Censors at this meeting, rather than to refer back to the Forsyth County Medical Association.

Discussion ensued upon this motion, but it was finally postponed until after the Presidential address, the hour (11½) having arrived for its delivery.

PRESIDENT'S ADDRESS.

The Society was congratulated upon the advanced ground it had reached in its race of progress. The history of medical societies in North Carolina was reviewed, beginning with the society founded in 1799 or 1800. It was shown that even then there was great care taken in the selection of members, all applicants for membership being examined in open meeting by the Board of Censors. This Board of Censors was the germ from which the present Board of Medical Examiners sprung. The work of the Board of Examiners was commented upon, showing the reflexive influence of their examinations upon the medical colleges, and upon the tone of the profession in the State. He stated that the Board had attempted to make the standard progressively higher but had not thought it wise to go in advance of the standard set by the best medical colleges in the country, although he intimated that there was great improvement needed before the standard would be what was desired. He urged the separation of the teaching and the diploma-granting bodies, as the great desideratum in medical education.

The present Board had examined 142 candidates from 23 different colleges. Of this number 27 had been rejected, or about one in seven. He thought the Society had improved the trust given them by the State, and now the time had come when the law should be changed requiring the successful candidate to receive five or six

votes in seven, instead of four in seven as now provided by the law; and that it should be a misdemeanor to practice without this license.

He believed the time had not arrived in this State for the establishment of a medical college, and he hoped it would not be undertaken until an endowment sufficient to support professors independently of the fees of students, had been secured.

The other topics dwelt on by Dr. Wood were the present status of medical education, the necessity for the endowment and encouragement of original research; the cultivation of preventive medicine; the dangers of specialism; the proposed amendment of medical ethics as undertaken by the New York Medical Society. Lastly, he said that it was as late as 1820 when quinine was first discovered, it made an era in chemistry and therapeutics; and only sixty-two years later we get the important announcement that quinine has been made by a French Maumené, by synthesis.

Upon Dr. Knox's motion, the address was referred to the Committee on Publication.

TIME AND PLACE OF MEETING OF THIRTIETH SESSION.

The Academy of Medicine, of Raleigh, sent a formal invitation for the Society to hold its next session in Raleigh.

Dr. Pittman invited the Society to meet in Tarboro.

Dr. Hines was in favor of accepting the invitation of Dr. Pittman, out of respect to one of the original members of the Society, who had so long faithfully identified himself with her interests.

Tarborough was unanimously selected as the place of meeting, and the third Tuesday in May as the time.

THIRD DAY—MORNING SESSION.

PROPOSED AMENDMENT TO CONSTITUTION.

Dr. Geo. G. Thomas introduced an amendment to the Constitution making the term of office of the Board of Censors six years.

Lies over under the rules until 1883.

REPORT OF COMMITTEE ON ESSAYIST.

We, the Committee to select an Essayist for our next annual meeting, beg leave to nominate Dr. Paul B. Barringer, of Charlotte, N. C.

W. P. Beall,
I. W. Faison,
J. M. Hadley,
} Committee.

INSTALLATION OF THE PRESIDENT.

At 12½ o'clock the newly elected President, Dr. J. K. Hall, of Greensborough, was conducted to the chair by Drs. P. E. Hines and Joseph Graham.

The retiring President said: I congratulate you, Sir, and the Medical Society of North Carolina, upon your promotion to this, the highest office in her gift.

Dr. Hall thanked the Society for the honor they had conferred upon him, and said that he would discharge the duties devolving upon him, to the best of his ability.

Adjourned until 2½ o'clock.

THIRD DAY—AFTERNOON SESSION.

Society met at 2½ o'clock, Dr. J. K. Hall, President, in the chair.

The discussion upon the case of Dr. A. D. Lindsay was resumed.

The following resolution, introduced by Dr. O'Hagan, was carried:

Whereas, one A. D. Lindsay, M. D., whose post office is Kernersville, Forsythe county, N. C., and who claims to be a member of the North Carolina Medical Society, has issued to the public a card setting forth the virtues of a certain Nostrum, called by him Analeptine, the formula of which he professes to publish; and whereas, the wording of the card exhibits gross ignorance of the first principles of medical knowledge and savors strongly of the tricks of the average medical charlatan.

This is to warn the public in the first place, that the Medical Society of North Carolina, because of the above violation of Arts. 3 and 4, chap. 2, of the Code of Ethics of the American Medical Association, hereby expels from membership in this Society said A. D. Lindsay, and to inform the public that he is no longer in fellowship with it.

And this Society hereby warns the public that any confidence which might be given to said Lindsay because of his supposed membership in this body, is entirely unworthy, and the North Carolina Medical Society hereby utterly repudiates both him and Analeptine.

N. J. PITTMAN, }
C. J. O'HAGAN, } Board of Censors.

The following new members signed the Constitution :

NEW MEMBERS FOR 1882.

Dr. C W Woolen, Randleman, N C
" W A Woolen, Randleman.
" J R Irwin, Alexandriana.
" A R Wilson, Greensborough.
" Kemp P Battle, Jr, Chapel Hill.
" Henry B Ferguson, Littleton.
" J T Strickland, Thomasville.
" J B Gunter, Durham.
" Geo S. Lloyd, Tarborough.
Dr. R S Young, Mathews.
" Wm G Bradshaw, Lexington.
" Geo A Smith, Princeton.
" C A Meisenheimer, Mt. Pleasant
" Marcus C Hunter, Huntsville.
" W P Whittington, Burnsville.
" C F Anderson, Mocksville.
" J J Clingman, Huntsville.

Dr. Geo. G. Thomas introduced the following resolution, which was unanimously carried :

Resolved, That so much of the rule relating to the tariff of Insurance fees, requiring the payment of $5 for certificate of one physician as to the professional standing of another, be repealed.

Dr. Wood stated that during his term of office he had pledged $30 for the support of the Index Medicus. He did this because he believed the Society would approve his action. At any rate it was helping forward an undertaking that was of the greatest moment to the interests of medical literature.

On motion of Dr. Haigh, the Society endorsed this action of the ex-President, and directed the amount of $30 to be paid.

The following resolution, offered by Dr. J. A. Reagan, was adopted :

Resolved, That the thanks of this Society are due and are hereby tendered to the citizens of Concord for the kindness and hospitality extended its members during our stay among them, and that we will ever cherish a kind remembrance of them.

Society adjourned to meet in Tarborough on the third Tuesday in May, 1883.

THOMAS F. WOOD, M. D., President.
L. JULIEN PICÖT, M. D., Secretary.

MINUTES OF THE BOARD OF EXAMINERS.

At the regular meeting of the Board of Medical Examiners of the State of North Carolina, held in Concord, N. C., beginning May 8th, 1882, the following gentlemen received license to practice Medicine and Surgery, to wit:

Dr. J. H. McBrayer, Boiling Spring.
" Robert S. Young, Matthews.
" Robert H. Morrison, Jr., Shelby.
" Marcus C. Hunter, Huntersville.
" A. R. Wilson, Greensborough, Guilford County.
" Chas. A. Meisenheimer, Mt. Pleasant.
" Kemp P. Battle Jr., Chapel Hill, Orange County.
" Geo. S. Lloyd, Tarborough, Edgecombe County.
" John B. Gunter, Durham, Durham County.
" Willard P. Whittington, Burnsville.
" C. F. Anderson, Mocksville.
" Henry B. Ferguson, Littleton.
" William G. Bradshaw, Lexington.
" James T. Strickland, Bliss, Surry County.
" John R. Irwin, Alexandriana, Mecklenburg County.
" James McP. Templeton, Dallas.
" John J. Clingman, Huntsville.
" L. E. Kirkman, Smithfield.
" Roger A. Smith, Princeton.
" Thomas S. Royster, Henderson.

The next meeting of the Board will be held in Tarboro, on Monday before the third Tuesday in May 1883. The following is the order of examinations:

Materia Medica—Dr. P. E. Hines.
Anatomy—Dr. T. D. Haigh.
Physiology—Dr. Geo. L. Kirby.
Surgery—Dr. Thomas F. Wood.
Practice of Medicine—Dr. Joseph Graham.
Chemistry—Dr. R. H. Lewis.
Obstetrics—Dr. H. T. Bahnson.

In accordance with the provisions of Sec. 16 of an act for the establishment of a Medical Board of Examiners, the license granted B. G. Harris, formerly of High Point, N. C., is hereby rescinded.

HENRY T. BAHNSON, M. D.,
Secretary Board of Medical Examiners of N. C.

CONCORD, N. C, May 11th, 1882.

The North Carolina Board of Health adjourned on the 11th of May, 1882, to meet again upon the call of the President. The next regular meeting will take place in Tarborough on the third Tuesday in May, 1883.

M. WHITEHEAD, M. D, President.

THOMAS F. WOOD, M. D., Secretary.

REVISED ROLL OF MEMBERS IN THE ORDER IN WHICH THEY SIGNED THE CONSTITUTION.

*Those marked * were present last meeting. Marked (D) denotes death.*

Dr. N J Pittman,* Tarborough.
" J B Jones, Charlotte.
" R B Haywood, Raleigh.
" Jas A McRae, Fayetteville.
" Jas B Dunn, Raleigh.
" Will G Thomas, Wilmington.
" S S Satchwell, Rocky Point.
" J R Mercer, Tarborough.
" E B Haywood, Raleigh.
" Jas P Bryan, Kinston.
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REPORT OF SECTION ON PATHOLOGY AND MICROSCOPY.

Read before the North Carolina Medical Society, at the 29th Annual Meeting, held at Concord, May 9th, 1882.

By H. W. Lilly, M. D., Fayetteville, N. C.

Mr. President and Gentlemen:

Having been honored at the last meeting of the State Medical Society with the chairmanship of the Section on Pathology and Microscopy, I shall proceed, without preface or apology, to give the results of my studies in these branches since our last annual gathering.

Those morbid conditions whose pathological nature is most obscure will especially claim my attention; and I shall refer only to the most recent advances in the art of microscopy, without essaying a lengthy review of a subject which is now so generally studied by the professional men of our time.

In the London *Lancet* (Annus Medicus for 1881), a good idea is obtained of the general advance of Pathological Research. Assuming this to be a standard of authority, we are led to believe that while pathologists, during the past year, have evinced no lack of energy and zeal, their labors have not been distinguished by any specially brilliant results. Their efforts, for the most part, have been directed to the old, familiar, knotty pathological problems, which have for time immemorial been stumbling blocks to the progress of our science; and, though success may be far in the future, by the unremitting zeal and perseverance of sanguine pathologists, we are brought nearer each year to the solution of the difficulty. The fields of these labors are situated mainly in Germany and France where the opportunities for pathological investigation in their well organized laboratories are unusually superior; and where there is no legislation, as there is some parts of Europe, that places any restriction on extended experiments. Still English and American pathologists have not been idle and have added useful matter to this branch of our science.

We are indebted to the London *Lancet* for the following general resumé of recent investigations in pathology:

The researches of the year which have most attracted attention are those of Pasteur in France which have reference to bacterial pathology. He has made extended investigations and experiments in this direction, and together with the contributions of Touissaint, Klebs, Arloing and Thomas, he now includes quite a large number of diseases in that class which is thought to depend upon the existence of special organisms and to which the practice of prophylactic inoculation is applicable. Typhoid fever has for some years been thought to be related in some way to a special organism, and the researches of Pasteur and Klebs have tended to confirm this to a great extent. A great many of the pathological changes which mark this disease are thought by them to bear to this organism a very intimate relation ; and the idea is well borne out by the experiments of Branlecht, which were made during an epidemic of typhoid fever, and which resulted in the discovery of an organism in the drinking water very similar in its nature to that noticed by Pasteur and Klebs.

Diphtheria has been produced by Talamon by means of inoculation, the inoculating matter being obtained from the throat, lungs and kidneys of a diphtheritic patient. This shows the existence of a special organism.

Investigations have been made by Cornil and Neisser which show conclusively that leprosy depends upon the presence of a special bacterial organism ; and by a close study of the manner and growth of these organisms, the peculiar development of the bacteriæ is thought to account for the strange lesions by which the disease manifests itself.

In syphilis, there has been discovered by Aufrecht a specific micrococcus which is thought to be the pathogenic agent. This view, however, has not been supported. It seems, therefore, that bacterial organisms are not confined exclusively to acute diseases ; and their recent detection as morbid agents in the production of a few chronic disorders has given birth to the hope that a great many chronic diseases, enveloped now in mystery, may be traced to a similar origin, and be amenable, therefore, to a more rational and decided plan of treatment.

So great has been the interest and enthusiasm manifested by investigations in bacterial pathology during the past year, that it has tended to divert their attention from other important subjects.

But in the Annus Medicus we find a condensed account of the labors of pathologists in other directions. It is little more, however, than a mere index to their work.

Among chronic diseases, tuberculosis has been afresh studied in its aspect as an infectious disease by Rindfleisch and Creighton, but with no very important additions to the literature of the subject. Some interesting and rare forms of local tuberculosis of the mouth and throat have been described by Russner and Echhoff, and of the urinary organs by Finne, while the histology of tubercular disease of the testes has been carefully studied by Waldstein. The relation of tuberculosis and scrofula has been the subject of animated discussion in Paris, but, while it directed attention to the subject and stimulated further study of the two kindred diseases, it was productive of no new developments. The study of structural blood-diseases has been mainly confined to their connection with blood formation in bone-marrow.

Lyon has examined the changes in the blood in traumatic anæmia, and the result has estabished the fact that it constitutes a distinct variety of anæmia, but its exact nature was not satisfactorily determined. Compared with the progress of previous years, very little of importance has been discovered in regard to the localization of nerve centres in the brain. What new facts have been noticed, have increased rather than lessened the difficulties which before existed in the correct interpretation of experimental facts.

In diseases of the spinal cord, it has been established by Dreschfield that locomotor ataxia may be due to sclerosis (primary) of the lateral, as well as of the posterior columns. It has heretofore been the accepted idea that the posterior columns alone were involved in this affection. When the lateral columns are the primary seat of disease, the ataxia is accordingly modified in its manifestations.

The discussion regarding the relation existing between syphilis and locomotor ataxia has been continued during the present year by Erb, Gowers and others ; and it has been conceded that a syphilitic individual is especially predisposed to ataxic disease.

Brown-Séquard has continued his investigations in regard to the production of paralysis and contractures through the agency of the peripheral nerves, and has clearly demonstrated that mechanical irritation of the medulla oblongata may give rise to pulmonary emphysema through the agency of the pneumogastric nerves.

Conheim has studied the effect of occlusion of the coronary arteries, and Martin has made able researches in atheroma, demonstrating the important part played by the *vasa vasorum* in producing the change in the larger arteries.

These then, according to my authority, are the main matters of interest to which the attention of foreign pathologists has been directed during the past year. In some cases, the investigations have not been completed; in others, no new fact of importance have been discovered. It is, at any rate, pleasing to know that these matters are revived every year or two; that they give rise to extended experimentation; and that in the mind of a pathologist, the obscurity and complexity of a subject do not detract from its interest.

The pathology of chronic lead-poisoning is one of the questions that engages now the attention of investigators; and the opportunities for *post mortem* examinations of patients afflicted with the disease are so rare that it may not be amiss to give the result of an autopsy recently made by Dr. Birdsall, of New York, in a case of plumbism complicated by a fatal pneumonia.

The spinal cord was the seat of the changes. The principal lesions were discovered at a point midway between the decussation of the anterior pyramids and the cervical enlargement of the cord, there being very little abnormal below this point. The changes in this section were greatest in the gray matter about 4 ctm. below the crossing of the pyramids. At this point for a distance of 2 ctm. hardening did not take place well, and there was noticed a marked increase of vascularity. The cells of the anterior horn were unusually large, and there were scattered throughout the substance of the gray matter numerous lymphoid cells. The only change in the cellular element of the cord that approximated a pathological lesion was discovered in the cells of the anterior horn of the upper cervical region. While in health they are large, well developed and plainly discernible, they were in this instance very small and indistinct. No special change was noted in the fibres of the anterior *roots*, except the increased vascularity of the parts and the presence of a few lymphoid cells lying between the fibres. In regard to other parts of the cord, there were discovered sclerotic spots in the antero-lateral columns, and there was some thicken-

ing of the septa near the gray matter. There was noticed also slight evidence of sclerosis in the columns of Goll. These pathological appearances, taken as a whole, were thought to indicate the existence of a mild grade of myelitis.

PATHOLOGY OF SHOCK.

At a recent meeting of the State Medical Society of Pennsylvania, a very interesting and elaborate paper on the "Pathology of Shock" was read by Dr. C. C. Seabrook. He reached his conclusions from experimentation on frogs and rabbits, asserting that violent injury to these animals produced a condition analogous to that observed in man.

The experiments are described as follows:

The animal was fastened on the stage of a microscope and the tongue or a web fixed under a power not over 250 diameters. A limb was crushed with a pair of forceps without disturbing that under the microscope. He wished now to discover the effect on the circulation. Upon the receipt of the injury, there was an instantaneous contraction of the capillary blood-vessels, which was quickly succeeded by dilatation and increased rapidity of the blood-current; as the dilatation became excessive, there was slowing—indeed, almost a stoppage of the circulation. He next divided the spinal cord just below the origin of the brachial plexus, and crushed a limb connected with the cord below the section, and another above the section. The crushing of the lower limb produced merely a capillary dilatation without slowing; while the crushing of the upper limb was followed by instant contraction, quickly succeeded by excessive dilatation, with at first, increased rapidity of the blood current and then stasis.

His conclusions are these:

That an impression made by an injury to a limb is conveyed to the cord and along the cord to the nervous centre which controls the tonicity of the blood-vessels, that is, to the vaso-motor centre; that the situation of this centre is at some point above the brachial plexus; and that there are numerous ganglia disseminated throughout of the cord which exercise a similar function though in a modified form, as is evident from the dilatation which follows an injury to a limb situated below the true vaso-motor centre. After this,

repeated sections were made up and down the cord to determine the exact location of this vaso-motor centre. The upper $\frac{1}{3}$ of the lower $\frac{1}{2}$ of the medulla was decided to be the point in question. The point to be determined next was: are these effects attributed to the cardiac nerves proper, to the centre of the inhibitory nerves of the heart or to the vaso-motor nerves? To decide this question, sections were made of the pneumogastrics, the cord, and of the sympathetic, and from careful experimentation, the following conclusions were reached:

I. The impression produced by an injury is conveyed by different nerves to the medulla, and then apparently paralyzes the vaso-motor centre in preference to all other centres, and destroys either the susceptibility to impressions or the power of generating impulses; and the blood-vessels under its control dilate because of the lack of stimulus necessary to the maintenance of the equilibrium of their calibre.

II. The heart is slightly influenced, if at all, through the inhibitory nerves or centre; and then always secondarily to the vaso-motor (except when some branches of the pneumogastrics are injured).

ADDISON'S DISEASE.

At a late meeting of the Pathological Society of London, *post mortem* specimens of Addison's disease were presented, and gave rise to a lengthy and important discussion of its pathology. It was scarcely possible to detect in the specimens the existence of any supra-renal capsules; they were much atrophied, and were represented by only a very thin band of fibrous tissue. One of the sympathetic semilunar ganglia, on sections, was found to contain an increase of fibrous tissue and nuclei, with a marked lessening of the number of cells. The cells, however, were healthy which precluded the thought of any serious disease. The question discussed was: Is Addison's disease, with the accompanying pigmentation of the skin, produced by tubercle or other disease of the supra-renal capsules? It was decided that disease of the capsules was not essential to the development of the condition in question; for, in many cases, the capsules are destroyed long before death and there is no bronzing of the skin. All were agreed that it was a disease

produced by a pathological condition of the abdominal sympathetic, manifesting itself in the form of *chronic neuritis*. The specimens exhibited, taken from a well-marked case of Addison's disease, showed the presence of this chronic neuritis, and the absence of any tubercular disease of the capsules. The capsules were atrophied, but it was claimed that this was no evidence of structural disease. It was admitted that tubercle of the capsules might itself give rise to chronic neuritis, and, in this indirect way, be a cause of Addison's disease; but other changes, such as spinal disease and injuries, can produce the same condition without being necessarily connected with the pathology of the disease.

In the vomiting and skin-bronzing of early pregnancy, the abdominal sympathetic ganglia are especially affected, and this condition, in its symptoms, is closely allied to Addison's disease. In a word, we must rid our minds of the one idea that Addison's disease is but a manifestation of some morbid condition of the supra-renal capsules, and remember that it is a nervous disease in that it bears a very close relation to disease of the sympathetic system.

Dr. Geo. M. Sternberg, in a report to the National Board of Health, has given the results of an interesting research with reference to the etiology and pathology of malarial fevers. He quotes extensively from Klebs and Tommasi-Crudeli, who claim in a memoir concerning the *bacillus malariæ*, that this organism is the pathogenic agent in fevers of this type. Dr. Sternberg, after close study of the subject, has not been able to identify the organisms described by them; and maintains that they have included more than one species of plant under the name *bacillus malariæ*. He attaches no importance to the pigmentary matter found in the blood and spleen by these authors, since in rabbits, that have died of septicæmia, the same features may be observed. His experiments were conducted at New Orleans in a manner very similar to that adopted by Klebs and Tommasi-Crudeli; but the results were not favorable to the *bacillus* theory.

He says: "Among the organisms found on the surface of the swamp-mud, near New Orleans, and in the gutters within the city limits, are some which closely resemble, and, perhaps, are identical with the *bacillus malariæ* of Klebs; but there is no satisfactory evidence that these or any other of the bacterial organisms found

in such situations, when injected beneath the skin of a rabbit, give rise to a malarial fever corresponding with the ordinary paludal fevers to which man is subject."

It was my original intention to refer at length to the valuable researches of Pasteur and Toussaint in regard to the pathological connection between anthrax and the bacterial organisms. But I have already detained you too long. An account of their experiment may be found in the Proceedings of the Paris Academy of Medicine, 1881, and will amply repay any one disposed to read it. They have established an intimate relation between charbon and *bacillus anthracis*, which, they maintain, is the pathogenic agent.

MICROSCOPY.

The following observations on "Mounting in Fluid," extracted from the New York *Microscopical Journal*, are worthy of attention:

Fluid mounting is applicable to all objects that are sufficiently transparent. The fluids employed are usually one of the following: Distilled water; carbolized water, 10 per cent.; camphor water; mixture of water and glycerine; pure glycerine. The process is about the same for all of these, for any fluid that does not dissolve the cement which is used. The cell must first be made, and for this purpose shellac is the best cement; it should be used rather thick. The objects should be thoroughly permeated by the fluid before they are placed in the cell. The mounting is conducted as follows: 1st. Choose a shellac, all of suitable thickness; put it on the turn-table and run out a layer of benzoate balsam. Set aside for one minute or until a thin skin has formed upon the balsam. 2d. Invert the cover of a pill-box and lay the slide upon it; then place a large drop of the fluid within the cell. Transfer the object to the slide and arrange it properly with needles. 3d. Take a mounted needle in the left hand and in the right the cover with a pair of forceps Place the needle point on the cell on the left hand side, and place the edge of the cover against it on the cell; then let the cover down slowly, breathing upon the lower surface so that the fluid may readily come in contact with it. When the cover is down, press it in the still soft balsam, but apply the pressure only on the outside. Let the slide stand for a few minutes, and then wash it gently with a steady current of cold water and set it aside to dry.

4th. When dry, run a circle of benzole balsam around it, after which the slide may be set aside for months before the finishing process is carried out. The slides are most generally laid aside immediately after the last layer of balsam is applied, until a number of them has accumulated to undergo the finishing process together. 5. Finish the slides by applying several coats of the mixture of asphalt and gold-size, followed by a final coat of asphalt to give a glossy black.

The above process is especially adapted to those cases in which strong glycerin is the fluid used.

The following is the result of some microscopical investigations by Dr. F. S. Billings, embraced in a report to the Massachusetts State Board of Health; and constitutes a useful discrimination between *trichinæ spiralis* and objects for which they are sometimes mistaken.

He first describes, after Cobbold, the microscopical appearance of the *trichina spiralis*, viz.:

Trichina spiralis is an extremely minute nematoid helminth, the male in its fullly developed and sexually matured condition measuring only 1-18th of an inch, while the perfectly developed female re ches a length of about one-eighth of an inch; body rounded and filiform, usually slightly bent upon itself, rather thicker behind than in front, especially in the males; head narrow, finely pointed and unarmed, with a central minute oval aperture; posterior extremity of the male furnished with a bilobed caudal appendage * * * female stouter than the male, bluntly rounded posteriorly; * * * eggs measuring 1-1270th of an inch from pale to pale, &c.

He says, with reference to the objects that simulate *trichina*, that there are sources of error in examining for these parasites which can be avoided with proper care. That the capsules of the parasites, formed by the sarcolemma of the muscular fibre, are frequently much thickened, the trichinæ being dead within them. The capsules, under these circumstances, present an abnormal appearance. And, in other cases, their true nature is disguised by calcification of the capsules and their contents. In some cases, *cysticeri* perish and become calcified; but these formations are very much larger than those of trichinæ and present more of a

caseous appearance "*Psorospermia* or the sacs of Rainey constitute another source of error. These have nearly the same physical appearance as the *trichina*, being filiform and elongated, and their situation within the sarcolemma which is included in the capsule of the *trichina;* by the psorosperms, however, it is retained, and only displaced by the object itself, limiting it on each side, and continuing directly from its poles." Bruch, Virchow and Leuckart have described an object, which is sometimes noticed in the muscular tissue of hams and which resembles trichinæ to a certain extent. It appears as "peculiar roundish or oval masses of a whitish color," and has been demonstrated microscopically to consist of "agglomerates of needle-like crystals." They are distinguishable from trichinæ in that "they fill the muscular fibre to a variable degree, without otherwise disturbing its structure, and disappear upon treatment with muriatic acid, the normal transverse striation again becoming apparent." These deposits are what are known as tyrosin crystals.

Some recent microscopical investigations by Dr. J. G. Richardson, of Philadelphia, published in Gaillard's *Medical Journal*, have a most important bearing upon the medico-legal question of the diagnosis of blood-stains. An intelligible synopsis even of his interesting paper would be too lengthy for a report of this kind. I shall, therefore, give only a few of the conclusions arrived at.

1st. That in unaltered blood-stains, upon clothing, leather, wood or metal, we can, by tinting with aniline or iodine, distinguish human blood-corpuscles from those of ox, pig, horse sheep, and goat, whenever the question is narrowed down, by the circumstances of the case, to these limits.

2d. By the method I have devised, we can measure the size of the corpuscles and apply the two corroborative tests of tincture of guaiacum with ozonized ether and of spectrum analysis, to a single particle of blood-clot, weighing less than 1-15,000 part of a grain and barely visible to the naked eye.

3d. Hence when an ignorant criminal attempts to explain suspicious blood-clots upon his person, weapon, etc., by attributing them to the ox, pig, sheep or goat, or to any of the birds used for food, we can, under favorable circumstances, *absolutely disprove* his false statement, and materially aid the cause of justice by breaking down his lying defense, even if twenty years have elapsed.

4th. But if the accused person ascribes the blood to a dog, an elephant, a capibara, or to any animal other than those mentioned above, it is impossible, on microscopical evidence of the size of the blood-corpuscles, to say absolutely whether the statement is true or false.

5th. In cases of innocent persons, stained with the blood of a pig, ox or sheep, testimony of experts, founded upon measurement of the corpuscles, would be valuable, but not conclusive, because, under certain circumstances, human blood-corpuscles may shrink to the size of those of the ox, whilst, under no known condition, do ox or pig corpuscles extend to the magnitude of those in human blood.

These conclusions were all based upon the microscopical measurement of the corpuscles.

Since the pathologists of this day are so actively engaged in the study of bacteriæ and the relation they bear to various morbid conditions, the following method of staining these organisms for photographing should be read by every one interested in the progress of pathology.

The method is original with Dr. Geo. M. Sternberg (U. S. Army) and is described as follows :

The bacteriæ are dried upon a slide or upon a thin glass cover, and are then treated with a drop of commercial sulphuric acid. After two or three minutes the acid is gently washed off, and the bacteria are then covered with the following solution : Iodine, grs. iij ; Potass. Iodid. grs. v ; water m 500. After a few minutes, they will be found to present a deep origin or brown color, which gives the desired contrast in a photograph negative. This method is useful for extemporaneous preparations only, which are to be photographed immediately. The color fades after a time and the bacteriæ undergo changes in form (swelling) as a result of this treatment, which renders the method unsatisfactory when the object is to make a permanent preparation. For this purpose, there is nothing better than the aniline violet, which, indeed, leaves nothing to be desired when a collection is being made without reference to photography. The specimens may be mounted in solution acetate potash, or, better, in carbolic acid water.

Anilin violet ink, which may be obtained from any stationer, is a

cheap and satisfactory staining fluid. After a minute's immersion in this, the bacteriæ assume a deep violet color. Those who have not resorted to this method will be astonished at the facility with which it is practised, and at the variety of forms which may be demonstrated at a moment's notice, without a resort to culture experiments or to a search in ditches and sewers. The mouth, the rectum, the extremity of the urethra in the male, and the vagina in the female, are constantly supplied with an incredible number of these minute, vegetable organisms, and a great variety of forms may be observed, especially in the discharges from the bowels. The smallest particle of saliva from the surface of the tongue, of vaginal mucus, or of fecal matter dried upon a slide, stained with violet ink and washed with a gentle stream of water, will furnish ample material for study, and will serve as a practical demonstration of the extensive distribution of *bacteria*. To obtain a satisfactory view, a good 1-5th inch objective will be required, and, for the smaller species, a 1-12th inch is desirable.

This method of staining *bacteriæ* is considered now the most valuable and least complex of any heretofore employed ; and, if for no other reason, its simplicity, and the ease and readiness with which it may be used, should commend it to every one.

If, in this paper, I have failed to interest you, or to bring to your notice any new developments in microscopy or pathology, I at least feel that I have endeavored faithfully to perform the duty assigned me as chairman of the section.

REPORT OF THE CHAIRMAN OF THE SECTION ON OBSTETRICS AND GYNÆCOLOGY.

Read Before the 29th Annual Meeting of the Medical Society of North Carolina, at Concord, N. C., May 9th, 1882.

By A. W. Knox, M. D., Raleigh, N. C.

Mr. President and Gentlemen :

The mutual interdependence which subsists between the two branches of medicine, whose progress you have designated me to report, is so close and intimate, as to make it eminently proper to consider them together. A recent writer* has said: "In reviewing the field of practice I have not found it possible to discover any natural line of division between Obstetrics and Gynæcology. No man merits the reputation of a good accoucheur, unless he possesses a thorough appreciation not only of the immediate *dangers*, but also of the far-reaching *consequences* of the faulty practice of his art; nor can his equipment be looked upon as otherwise than defective, unless it include an ability to repair surgical injuries at the time of their occurrence." Yet, for the sake of convenience and systematic arrangement, I will take up each department separately.

First, then, let us glance at the recent progress of *Obstetrics*, which, with advancing knowledge, "has ceased to rest upon *empirical* rules, and is already—with rare exceptions—the natural outcome of *scientific principles.*"† Secondly, I will endeavor to present a rapid *resumé* of its twin-sister, Gynæcology, which has, perhaps, made even *more* vigorous strides in developmental growth during the past few years.

*Lusk, Science and Art of Midwifery. Page 6 of Preface.
†Ibid.

OBSTETRICS.

ANTISEPTIC MIDWIFERY.

The teachings of Lister—so strongly impressed upon *surgical* practice in the past ten years, and so full of beneficent results—are yearly commanding a wider range of attention, and already have made their impress on *obstetrical* practice. There has been a great improvement in the results of confinement among lying-in patients in the maternity hospitals in the past few years ; and this change seems to be rationally attributable to the almost universal application of the principles of listerism at these special institutions.

Dr. Lusk, in his recent work on Obstetrics (which is spoken of by one of his critics as "by far the most learned and complete exposition of the Science and Art of Obstetrics written in the English language"), writes as follows: "*Complete* antisepsis in the surgical sense is, of course, impracticable. The conduct of labor under carbolic spray has been tried in Germany, but has not been found to add to the safety of the puerperal woman. *Adequate* antisepsis has, however, been proved to result from the observance of a variety of precautions which have been the slow outcome of experience. These, in brief, in hospitals, consist in protecting the patient from every known form of contaminal tion, and in the prompt removal and isolation of every puerpera-woman who manifests febrile symptoms. In *every* case of labor, whether in hospital or private practice, the hands and forearms should be freely bathed in carbolic solution before making a vaginal examination. A *nail-brush* should form part of the ordinary obstetric equipment. All instruments employed during or subsequent to confinement should be carefully disinfected. In prolonged labors, in cases of dystocia, and where the membranes have been ruptured and the fœtus is dead, it is a useful precaution, after delivery, to wash out both uterus and vagina with warm, carbolized water.

"In the puerperal period, the warm carbolized douche stimulates uterine retraction, and promotes the rapid healing of wounds in the vaginal canal; in hospital practice, it possesses

the additional advantage of preventing the accumulation of putrid albuminoid matters in the air. In private practice, the patient should employ a *new* syringe; in hospitals, every woman should be supplied with a glass tube to be attached to the irrigator, and when not in use, these tubes should be immersed in carbolic acid. The stream injected into the vagina should be continuous, like that from the fountain syringe." "With his *hospital* patients, instead of *cloths* to the vulva, he has been in the habit of using *oakum*. By soaking the latter in a solution of carbolic acid, the vulva is surrounded by an antiseptic atmosphere." The same author goes on to say:

"Pedantic as these directions may seem, they are justified by experience, and the carrying out of the details given easily becomes a matter of habit. That by such precautions puerperal fever is destined to be erased from the list of dangerous diseases attacking the woman in childbed is saying more than is warranted. Nevertheless, it is true that the physician ought not to lose the sense of personal responsibility for its occurrence. Indeed, puerperal fever ought to be regarded as a *preventible* disease, and an *attack* as the evidence that some source of danger has been overlooked, though, owing to the imperfection of our knowledge, it may easily happen that, even with the keenest scrutiny, the precise cause in an individual case may escape detection."

At the recent meeting of the International Medical Congress, in London (1881), M. Tarnier stated that, in 1865, when he was *interne* at the Paris Maternité, the mortality was about 5 in 100, but that, *now*, it was reduced to 2 in 100 in the *hospital*, and to 0.75 in 100 (*i. e.*, three-quarters of one per cent.,) in the *pavilion*, which he had had constructed a few years ago. "The chief point in this pavilion is that *each patient has a separate room*, entered from the outside, so that a nurse can only pass from one room to another by going outside into the open air. The furniture is all of japanned iron, the floors, walls, and ceilings are of impermeable concrete, and can be washed with water. The mattresses and pillows are stuffed with oat-chaff, which is burnt after use in every single case. Instead of a rubber cloth, the mattress is protected by a thick sheet of brown paper, made

water-proof by a layer of pitch on one side. The paper is cheap, and is burned after being soiled. He has used various antiseptic solutions for the washing of the genitals—borax, carbolic acid, sulphurous acid, and bichloride of mercury; and he concludes that a weak solution of bichloride of mercury (one-to-a-thousand) is the most powerful germicide." "To prevent the implantation of the germs in the air into any wounds produced at the moment of expulsion, he annoints the fœtal head with a one-tenth solution of carbolic acid each time it appears at the vulva."

In an article on "Antiseptic Midwifery and Septicæmia in Midwifery," Dr. Robert Barnes, of London,* writes as follows: "About the third day (after confinement) it is a familiar fact that some slight rise of temperature and a quickened pulse attest a degree of febrility. This has hitherto been considered as 'milk fever'—it being *assumed* that the starting of the new function in the breast causes febrile disturbance. Sometimes the term 'ephemeral fever' has been used. Now, it deserves to be considered *whether this febrility, occurring on the third day, be really due to the milk-secretion;* that is, is it *physiological?* Is it a *constant* phenomenon? It is *not* constant. If the breasts are sound and perform their functions well, there is no fever. If there *is* fever, it obstructs the due secretion of milk. If the breast is not in a fit condition to secrete, then, indeed, fever is excited. Dr. Fancourt Barnes has made observations which seem to determine this point. So long as antiseptic care was not observed at the British Lying-in Hospital, high temperatures ruled; when antiseptic care was strictly observed, high temperatures were rarely seen. The truth is, that *about the third day* is the epoch for the establishment of the *absorptive* process. The two days following labor are a period of rest. During this time, the disintegration of the uterus and other superfluous structures is only beginning, and the supply of waste-stuff for absorption is scanty. This can hardly be a source of fever; and if there be any blood or other matter in the uterus, it will hardly decompose under two days or more, so as to yield septic stuff for absorption. But on the *third* day, waste-stuff is pouring into the blood; decomposition

*American Journal of Obstetrics and Diseases of Women and Children. Jan., 1882.

may have begun in the uterus, and active absorption finds material to work upon. Thus it is, that febrility occurs on the *third* day. The mammary glands *labor* under the disturbance induced, their healthy action is impeded, and being under easy observation, their *struggle against the fever* is interpreted as the *cause* of the fever."

Dr. Barnes proceeds to summarize the rules of Antiseptic Midwifery in the following pithy aphorisms:

1. Keep the door shut against the enemy by maintaining contraction of the uterus.

2. Prevent the enemy from forming and collecting, by irrigating the parturient canal with antiseptic fluids.

3. Eject the enemy as fast as he effects an entry; that is, keep the excretory organs in activity.

4. Guard the lying-in chamber against the approach of foreign poisons.

5. Fortify the patient against the attack of the enemy by keeping up due supplies of wholesome food.

THE RELATION BETWEEN THE TIME OF PREDILECTION FOR IMPREGNATION AND STERILITY.

Cohnstein, of Heidelburg,* maintains that every woman is, at different intervals, more or less apt to become impregnated. This he calls "predilection of pregnancy." A very healthy-looking woman, æt. 36, and belonging to a healthy family, had several years ago given birth to a premature child. Since then she remained sterile, which led her to consult the author. There was nothing in the sexual organs of the patient that could probably cause sterility. Cohnstein calculated that, had the first child gone to term, it would have been born in the middle of February. The woman, therefore, had been impregnated in the beginning of the preceding May. Now this period, thought he, was, for the woman in question, *the period of predilection for impregnation.* He informed the parties of his theory, with the result that the menses failed to appear in the following May, and in due time the woman was delivered of a full-grown child.

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*American Journal of Obstetrics, Supplement. Feb., 1882.

ORIGIN OF THE CARUNCULÆ MYRTIFORMES.

Dr. Wm. T. Lusk* has this to say, on this subject: We are indebted to Shroeder for having pointed out that the fleshy eminences, known as the *caruncule myrtiformes*, are the result of *child-bearing*, and *not*—in the *rule*, at least,—of sexual intercourse. Coitus simply causes a solution of continuity, at one or more points, of the free border of the hymen. *The pressure of the child's head*, however, during labor, causes necrosis and sloughing of the heretofore persistent though lacerated hymen, of which, subsequently, the familiar, isolated elevations of mucous tissue about the vaginal orifice furnish the only visible traces. My own experience is entirely confirmatory upon this point. In the examination of young, nulliparous prostitutes, who enter Bellevue Hospital for uterine disorders, I have always found *a torn hymen*, but, *in no case*, *caruncule myrtiformes*.

NAUSEA AND VOMITING OF PREGNANCY.

At the meeting of the Berlin Medical Society in March, 1879, Dr. L. Rosenthal, in the course of extended remarks on this subject, calls attention to the not infrequent existence of disease of the cervix uteri as a cause of the nausea and vomiting of pregnancy; and after giving an outline of Copeman's method of manual dilatation of the external os and cervical canal, by the passage of the index-finger as far as to the first joint, mentions two cases of his own, in which the manœuvre was perfectly successful, but which he does not regard as test-cases, because, apart from their small number, they were not of the class called *uncontrollable*. He says the method will fail in some cases, of course, but should reduce the induction of abortion to a minimum. He recommends it in cases of *moderate* severity, and in those of nervous and hysterical vomiting; and says, that, thus far, it has never produced abortion.

Several years ago, Dr. J. Marion Sims published in the London *Lancet*, the details of a number of cases of the most obstinate vomiting of pregnancy, which (after the fruitless trial of all the usual drugs and remedies) had been completely and promptly

*Science and Art of Midwifery. Page 7.

relieved by the local application to the cervix and external os of a solution of nitrate of silver, varying in strength from ʒ i ʒ ij to the ounce of water up to that of the solid stick. The introduction of the method was ascribed to Dr. Jones, of Chicago, whose successful employment of it had been quite extensive. In the Philadelphia *Medical Times*, August 7th 1880, Dr. Welpouer (a German physician) is quoted as having used, with excellent success, in three very obstinate cases, a ten per cent. solution of the same drug. He *keeps it in contact with the cervix for five minutes*, and then dries the parts with cotton wool. The application requires to be repeated several times at intervals of two or three days; but its ultimate success, he says, is remarkable. Good results have also been claimed of late for "ingluvin," a preparation made from the gizzard of the chicken in doses of from 5 to 10 grains. The Faradic electric current, applied to the pit of the stomach after the method of Dr. Frederick Lente, of Cold Spring, on the Hudson, but formerly of this State, relieves many cases. Dr. Fordyce Barker has had good results with carbolic acid water, containing a drachm of bromide of potassium to the syphon.

MARTIN'S RUBBER BANDAGE AS A UTERO-ABDOMINAL SUPPORTER.

In the *American Journal of Obstetrics* for October, 1881, Dr. George Cowan, of Danville, Ky., presents the report of four cases thus treated in the latter months of pregnancy. "One was a primipara; the other three, multiparæ, and all in moderately good health, but suffering to such an extent from backache, vesical tenesmus and pains low down in the abdomen and pelvis, as to be unable to be upon their feet, except with great pain and effort. In each case, the bandage gave marked relief during the remaining period of their pregnancies, eliciting from them unqualified expressions of commendation for the support and comfort afforded. The bandage was applied so as to encircle the lower portion of the abdomen and the upper portion of the pelvis, crossing the spine in its lower lumbar region. In this way the lower portion of the abdomen was symmetrically compressed upwards and backwards, in an elastic sling, which de-

rived its point of support mainly from the 'small of the back,' and to some extent from the crest of the ilium of each side. The bandage, when in position, and viewed in profile from the side, showed the turns overlapping each other less widely at the *median line of the abdomen*, which it covered from the pubes to within an inch or two of the umbilicus; while the *greatest* overlapping was at the *median line of the lumbar region*."

VIBURNUM PRUNIFOLIUM IN THREATENED ABORTION.

To this remedy we are indebted for a decided advance in our knowledge of efficient measures addressed to the prophylactic treatment of abortion and miscarriage, in the presence of threatening symptoms. As early as 1866, Dr. Phares, of Newtonia, Miss., published an article, directing attention to its efficacy in preventing abortion; and yet, for years, the profession at large seemed indifferent to, or unacquainted with, its remarkable powers in this direction. At length, however, it is coming to be more generally used and endorsed by medical men, and is steadily growing in favor. Alluding to a common habit among negro women on some of the Southern plantations of taking a decoction of gossypium, or cotton root, to produce abortion, Dr. Phares says: "Some farmers, on whose plantations I have used the medicine, and who have seen much of its effects on negro women who had always managed to miscarry, declare their belief that no woman can possibly abort if compelled to use the viburnum. This may be claiming too much for it," he adds, "but it has certainly prevented abortion in every case in which I have ordered it for the purpose."

Dr. Edward Jenks, Professor of Medical and Surgical Diseases of Women in the Detroit Medical College, has an article on this subject in the first volume of the Transactions of the American Gynæcological Association, commending it in the highest terms, and citing the favorable experience of several other physicians. He states his belief "that none who have been persuaded once to test its efficacy, are now willing to omit viburnum from the list of those remedies, which they regard as indispensable."

In cases of threatened abortion, he gives the fluid extract in teaspoonful doses every two or three hours as long as it seems

to be necessary? and when the *habit of aborting* has been formed, he prescribes a half teaspoonful to a teaspoonful of the fluid extract four times daily, beginning at least two days before the regular menstrual date, and keeping it up not only during the usual period of the flow, but two days longer than the menses continue, when the patient is not pregnant.

The action of viburnum is that of *a true uterine sedative*, and even in *large* doses, it seems to have no deleterious effects, whatever. Dr. J. B. Hughes,* of New Berne, N. C., writing on this subject, says: "The action of the uterus under chloroform shows that it is controlled by both reflex and ganglionic nerves, and that it is only the operation of the *former* which is suspended, whilst that of the latter goes on uninterruptedly, and labor proceeds as regularly as though the process depended exclusively on the ganglionic nerves. It is on the *ganglionic* nerves of the uterus that viburnum appears to act, for it represses and promptly suspends the contractions. Its action also seems *special*, for its effect on the *general* nervous system is slight, and only noticeable in the more quiet and composed manner of the patient, which may be its *indirect result by suspending uterine pain and contraction.* So, also, in its influence on *hæmorrhage*, which may be relieved by checking the contraction, and thereby preventing farther detachment of the placenta. * * * The medicine may be extended, in its application, to the congestive and neuralgic forms of dysmenorrhœa, and in my hands has proved an admirable remedy."

Dr. Jenks says, further: "In that form of dysmenorrhœa with menorrhagia, caused by fibroid growths impinging upon and twisting the uterine canal, viburnum, *in combination with ergot*, has proved beneficial, and *much more so than either remedy, if given without the other!* It is not claimed for it, that it possessed merits that will cause it to supercede or supply the place of many surgical procedures in gynæcology, nor that its administration is *always* followed by the desired results."

*North Carolina Medical Journal, December, 1879.

EXPRESSION OF THE PLACENTA.

In every case of labor, the watchful physician seeks to forestall the occurrence of hæmorrhage by securing firm contraction of the uterus. This is accomplished by kneading the uterus through the abdominal walls. In the present day, great stress is laid upon what is called "*expression of the placenta*" by grasping the uterus through the abdominal walls, so that the fundus rests in the palm of the hand with the fingers to the front, and making gentle friction at first, and then stronger pressure upon the uterus until vigorous contractions are secured. Dr. Lusk writes of it as follows: This exercise of circular compression forces the placenta from the uterus; or, in case of failure, the process may be repeated until the object is accomplished. It is true, that the expulsion of the placenta will, as a rule, occur *spontaneously*. The unaided uterus is, however, liable to relax and become the source of hæmorrhage; or, where the delivery does not take place speedily, it may, on the other hand, close down so as to imprison the placenta within its cavity. This method is associated indissolubly with the name of Crédé; for, though the value of friction, of kneading and compression was appreciated by others, it remained for Crédé to elevate *placental expression* to the rank of a recognized procedure of obstetric practice. The great merit of Crédé's method is, that *by maintaining retraction it prevents hæmorrhage*, and by promoting speedy *expulsion*, it *guards against the dangers of retention*. When systematically practiced, the bugbear known as *adherent placenta* is the rarest of accidents. The practice is not difficult, and is devoid of danger. To be successful, however, expression should be practiced *only during a contraction*, and the propulsive force should be directed from the fundus downward in the axis of the uterus. Spiegelberg lays great stress on exercising compression of the uterus from the moment the head emerges from the vulva, and not waiting until the delivery of the child is ended. By so doing, general contractions are maintained, and the detachment of the placenta promoted.

VERSION DURING LABOR BY EXTERNAL MANŒUVRES.

M. Labat relates (Ann. de Gyn., Jan. 1881,) two cases in which he accomplished version during labor by external manipulations. He says, that whenever a presentation less favorable than the vertex is detected, version by external manœuvres should be tried, if the fœtus be movable. *Moderation* must be exercised in these endeavors, however, as rupture of the uterus might result from forcible efforts to turn the child. During labor, the uterus is less tolerant of interference, and its walls do not support pressure so well as during pregnancy. In the two cases of Dr. Labat, no precaution was taken to *secure* the vertex presentation obtained, because the uterine contractions at once fixed the head in the pelvic brim. Dr. Labat concludes as follows:

1. Version by external manipulation is possible in certain cases during labor;

2. When the situation of the fœtus is transverse and the placenta is inverted near the os uteri, cephalic version by external manipulation renders the hæmorrhage less severe;

3. When *cephalic* version is impossible, *pelvic* version should be resorted to;

4. *During labor*, the application of the *eutocic belt* is not always necessary. [The eutocic belt is designed by Dr. Pinard, in the form of a modified binder, to apply round the abdomen to retain the head on the pelvic brim, after external version has been done. Dr. Pinard thus *secures* a head-presentation weeks before labor sets in."*]

CAN SYPHILIS, ACQUIRED BY THE MOTHER DURING PREGNANCY, BE TRANSMITTED TO THE CHILD IN UTERO?

Dr. Vajda,† after examining many of the recorded cases bearing on this point, concludes that a mother *can* infect her offspring *in utero*, and doubts the correctness of the view, which holds that a mother can produce a syphilitic child without being herself syphilitic. He gives the following case in illustration:

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*London Medical Record, February 15th, 1881.

†Ibid.

Between the 20th and 24th of June, 1878, a man contracted syphilis and returned to his wife, who was at that time in the fifth month of pregnancy. On August 10th, Vajda examined the wife and found her healthy; she became infected on September 9th, and on the 17th of October, a hard chancre and indolent glands were present. The child was born at term, but a papular eruption appeared seven weeks after birth. Psoriasis and pustules followed. The author states that extra-uterine infection could be excluded in this case, as well as a previous attack of syphilis in either parent.

CHLORAL-HYDRATE IN LABOR.

Dr. Playfair, in his excellent work on Obstetrics, inculcates the practice of giving chloral during the first stage of labor, when the "tearing," "splitting" pains are present, in doses of 15 grains every quarter-of-an-hour until 45 grains are taken, by which time, the patient will generally have fallen asleep. This plan has the triple merit of obviating the early use of chloroform, of promoting relaxation and dilatation of the os uteri and cervix *without disturbing the rythmic contraction of the womb*, and of giving to the patient refreshing sleep between the pains, whereby she gathers new strength for the pains which are to come. He reserves the use of chloroform until the head is on the floor of the pelvis and about to pass the perinæum. By obviating the necessity for the repeated use of chloroform early in labor, the tendency to post-partum hæmorrhage is thought to be materially lessened, also. Should the labor be prolonged, a fourth, or even a fifth or a sixth dose of chloral may be given, as the patient's condition may indicate.

NITROUS OXIDE AS AN ANÆSTHETIC IN OBSTETRICS.

After trying nitrous oxide with a view to allaying pain during labor, Dr. Klikowitsch, of St. Petersburg, has reached the following conclusions:

1. Nitrous oxide is free from danger to mother and child, and does not interfere with the progress of parturition.

2. Its efficacy in allaying pain, at any stage of labor, cannot be doubted.

3. The patient remains conscious, so that she may be called upon, to exert abdominal pressure in order to help in the expulsion of the child.

4. Vomiting never occurs; on the contrary, if present, it ceases after a few inhalations of nitrous oxide. Nausea, headache, dyspepsia never follow the administration of the gas.

5. Anæsthesia may be kept up during the whole course of labor, as a few inhalations before each coming contraction of the uterus, suffice to blunt the pain. The action of the gas, therefore, does not accumulate.

6. There is no need of a professional assistant to administer the anæsthetic.

7. Klikowitsch uses a mixture of 30 per cent. nitrous oxide with 20 per cent. oxygen.

ICE IN THE TREATMENT OF MAMMARY ABSCESS.

In the *American Journal of Obstetrics* for Jan., 1881, Dr. Hiram Corson gives in detail the histories of several cases treated by this method where—according to this recital of them—the relief given seems almost magical. He says that, during the 27 years that he has used it he has often been called to women with a breast painful, swollen, and red over the swollen part—the result, the patient would say, of "a chill, which happened in the night and fell right away on the breast," since which time she had had no rest. He here at once applied the ice; and in no instance,—if *suppuration had not already begun*,—had he failed to disperse the inflammation, and at the same time brought comfort to the patient. He even applies it when the suppurating process is so far advanced that nothing can prevent it, believing that, by removing the heat and allaying the inflammation, it will prevent any more of the breast from becoming involved in the suppurating process. The method of applying it is thus described: "There is no better way to apply the ice, than to put it into a bladder with just enough water to float it, or just to form a kind of water-cushion, that will fit the inflamed part nicely. A single thickness of muslin between the bladder and the breast will keep the bladder in place the more readily—but it is not too

cold, *without any*." He has never met with a single patient treated in this way, who has not given utterance to the great relief it brought to her.

PUERPERAL MANIA CURED BY OVARIOTOMY.

In the Transactions of the New York Obstetrical Society for 1880, Dr. Noegerath reports a case of puerperal insanity, complicated with ovarian cyst about the size of a pregnant uterus at full term. The insanity was of the melancholic type, and had lasted four months. The vaginal temperature was 100° Fahr., and the pulse 120. He performed ovariotomy and found the tumor full of the most offensive pus; but he succeeded in preventing *a single drop* from getting into the peritoneal cavity. The pedicle was tied and dropped into the abdominal cavity. The microscopic examination of the blood showed "*every corpuscle filled with bacteria.*"

"As soon as the patient came from under the influence of the chloroform, she was perfectly rational; every symptom of insanity had disappeared." The patient ultimately recovered, although she had septic peritonitis. A single enema of 30 grains of quinine rapidly reduced the temperature from 103° to 100°, after the hypodermic use of quinine and carbolic acid had been unavailingly tried; and Dr. N. attributed the subsequent rapid improvement to this one large dose.

ELECTRICITY IN EXTRA-UTERINE PREGNANCY.

Dr. Wm. T. Lusk, in his recent work on Midwifery, writes as follows: "The transmission of the Faradic current through the ovum has proved a safe and efficient method for destroying the life of the fœtus during the first three months of its existence. One pole is passed into the rectum to the site of the ovum, and the other is pressed upon a point in the abdominal wall two or three inches above Poupart's ligament. The full force of the current of an ordinary one-cell battery should be employed for five or ten minutes. The treatment should be continued daily for one or two weeks, until the shrinkage of the tumor leaves no doubt as to the death of the fœtus."

LARGE DOSES OF MORPHIA IN PUERPERAL ECLAMPSIA.

In the *American Journal of Obstetrics*, Dr. C. C. P. Clark advocates the use of heroic doses of morphia for puerperal convulsions. He says: "A patient with puerperal convulsions should have forthwith injected into her arm a grain-and-a-half of morphine *by weight*. Should the paroxysm return any time after two hours this dose should be repeated; and, if she be in labor, she should have another dose after eight hours any way. This quantity may look large; but I am perfectly confident, after having tried it many times, that it is absolutely safe. I am almost prepared to swear, that *twice* the amount, *not repeated*, would do no harm to a patient in a strongly eclamptic condition. I am very sure it *seldom* would. The nervous system, in this disease, is peculiarly tolerant of opiates; and you need not fear to give the sufferer what would endanger her life if that system were in its normal condition. She is like a man in great terror, or abstraction, or weighed down by grief, or deeply drunk; *if you would make him heed what you say, you must call to him aloud!* And what you give, you must give *in a lump*, and not scatter it along at intervals through half a day, perhaps, timidly watching its effect on the pupils or the consciousness of the patient, neither of which, in this disease, will afford much information; or waiting for another fit to proclaim the insufficiency of what you have done, and rebuke your irresolution. While you falsely fear the sleep of *opium*, the sleep of *death* creeps on." The method of Dr. Clark seems to me worthy of careful and extended trial; but I would add one word of caution, which he fails to mention; and that is, that *some* cases of puerperal eclampsia are undoubtedly due to *urinæmia*, and demand the use of measures addressed to the purpose of *rousing into action the suspended function of the dormant kidneys*. In the latter class of cases, *reliance on the large doses of morphia alone* would probably sacrifice a life, which might be rescued by a timely response to the suggestions afforded by an examination of the patient's urine.

NEW TREATMENT OF PLACENTA PRÆVIA.

Dr. R. J. Nunn, of Savannah, Ga. (*Am. Jour. Obstet.*), details a case of placenta prævia, successfully treated by the local application of a styptic *directly to the bleeding surfaces.*

He was hastily summoned, at midnight, to find his patient almost collapsed from hæmorrhage, which had lasted for some time. [He had previously made the diagnosis of placenta prævia.] The pains had ceased, the vagina was filled with clots, and the os dilated sufficiently to admit the finger, by which the placenta could be easily detected, and the warm blood distinctly felt, flowing through the os. Cleaning out the clots, a speculum was introduced, and the liquor ferri persulphatis applied *to the bleeding surface* by means of a cotton swab passed through the os. The hæmorrhage ceased *instantly and absolutely*, and the speculum was retained in place about fifteen minutes to see that the bleeding did not recur. Stimulants and ergot were then given, and a pledget of cotton saturated with the styptic was left in the os, and sustained in place by a very slight tampon of cotton. Labor re-commenced in about an hour. Up to 6 A. M., no blood was lost. It then returned; but the iron solution was again applied, which stopped the bleeding instantly. At 7.15, the hæmorrhage again occurred, but was instantly controlled as before. All this time labor was going on satisfactorily. At 8.20, the patient got out of bed to have an evacuation, when, during a severe pain the placenta was expelled, followed shortly after by the fœtus, which was dead, evidently destroyed by the hæmorrhage before the application of the styptic, as there was really no dangerous bleeding subsequent to the use of the iron. The placenta showed the marks of the styptic in three places; one near the centre being a patch about two and a half by one inch, the other two smaller and near the margin. His explanation of the mode of action is, that the first action of the styptic, when applied *directly*, is to form a clot over and around the internal portion of the cervix. This clot, during the period of rest, will extend, insinuating itself, perhaps by capillary attraction, to a greater or lesser extent, between the placenta and the uterine wall; the following pain, by compressing the clot, hardens it,

and drives the styptic farther into the bleeding vessels, and, it may be, forces it yet farther between the detached surfaces. This action is repeated, as new surface is exposed, until the supply of styptic is exhausted. That this is possible, is shown by the large area of the mark on the placenta, of the first application, about five square inches, while the cervix through which the probang was introduced was not over one-half to three-fourths of an inch in diameter.

THE GENU-PECTORAL POSITION IN MALPRESENTATIONS OF THE FŒTUS.

Dr. Charles N. Fowler (*Am. Jour. Obstet.*, Jan., 1882), records three cases of rectification of malpresentation by resort to Campbell's position *on the knees and chest.* The first two cases were transverse presentations, without the prolapse of the arm. The third case is so striking that I quote it entire: "Mrs. E. W., aged 22, second confinement, was this morning, 4 o'clock A. M., astonished by a sudden flow of water, unattended by pain, or other signs of labor. Thinking it was simply a flow of urine, I told the husband to let me know when pain indicated labor. I reached the bedside 10.30 A. M., and was astonished to find the (*left*) hand and arm in the vagina, and the head in the right iliac region. I at once placed her in the knee face position, and exerted pressure upon the head from left to right and upon the breech from right to left, until the position seemed to be corrected. By vaginal examination, I found the hand and arm had receded within the uterus, and the child's head engaged in the superior strait. She was advised to get up, that we might test the permanence of the change. Finding that the head retained its favorable position, I left her, with orders to call me when pain indicated approaching labor.

I was recalled at 2.30 P. M., found the head firmly engaged in the pelvis, and delivered her of a well-developed, healthy female child."

In all three of his cases the change of the presentation was followed by a stoppage of the pains for several hours; but they then returned and progressed to a favorable termination, except

in the second case, whose final result he did not know of, for the attending physician (with whom he had been in consultation) informed him that another doctor was called, "because they had stopped her labor."

TYING THE UMBILICAL CORD.

Dr. Lusk writes:* "In practice, it is very desirable that the physician should understand the physiological difference between the effects of the early, and those of the late, application of the ligature. The custom as regards this point has been by no means uniform. The common practice of the present day is, to tie the cord immediately after the birth of the child. Still, there have not been wanting in recent times warning voices against precipitate action.

In 1875, Budin,—at that time interne at the Maternité of Paris,—undertook the following experiments at the suggestion of Professor Tarnier: In one series the cord was tied immediately after the child's birth, and the blood which escaped from the placental extremity was measured; in the other series, the quantity of blood was determined in cases where the cord was not tied until several minutes after delivery. By comparison of the results thus obtained, he found that the average amount of placental blood was three ounces greater in the first than in the second series of experiments. Welcker estimated the entire quantity of the blood in the infant at one-nineteenth the weight of the body, which would amount, in a child of seven pounds, to six ounces. To tie the cord *immediately after birth* would therefore be equivalent to *robbing the child of three ounces of blood, which would otherwise pass into its circulation.* This startling result has, in the main, been abundantly confirmed by subsequent observers. According to the clinical observations of Budin, Ribémont and Schücking, infants after *late* ligation of the cord are red, vigorous and active, whereas those in which the cord is tied *early* are apt to be pale and apathetic."

Dr. Lusk finally sums up the whole question in the following conclusions:

*Science and Art of Midwifery. Page 212.

1. The cord should not be tied until the child has breathed vigorously a few times. When there is no occasion for haste arising out of the condition of the mother, it is safer to wait until the pulsations of the cord have ceased altogether.

2. *Late* ligation *is not dangerous to the child.* From the excess of blood contained in the fœtal portion of the placenta, the child receives into its system only the amount requisite to supply the needs created by the opening up of the pulmonary circulation.

3. Until further observations have been made, the practice of employing uterine expression previous to tying the cord is questionable.

4. In children born pale and anæmic, suffering at birth from syncope, late ligation furnishes an invaluable means of restoring the equilibrum of the fœtal circulation.

TARNIER'S AXIS-TRACTION FORCEPS.

At the last meeting of the International Medical Congress, Dr. Fordyce Barker, of New York, said that this forceps was the first successful result in an attempt, in which many have failed, to assist nature by traction with an instrument, *with safety to the soft parts, in the direction of the axis of the superior strait.* In this respect, he considered it the most important modification of the forceps which has been made within the last quarter of a century. By its use the head could be brought down from above the superior strait without injury to the soft parts, when this could not be effected by any other instrument suggested. It is this feature which constitutes the great and original merit of the Tarnier forceps. As regards its principle, it seemed to him perfect. Its *danger* was the risk of cutting the soft parts in the lower strait. Therefore, when the head reaches the lower strait, the Tarnier forceps should be taken off and the delivery completed by an ordinary one. Dr. Lusk writes as follows:* "In all high operations, where the cervix is sufficiently dilated, I cannot too strongly recommend the ingenious forceps of M. Tarnier, which, by its construction and action, obviates, to a great extent, the objections to the more familiar methods. This forceps pos-

*Science and Art of Midwifery. Page 351.

sesses two original features: 1. The shanks, in place of running forward continuous with the pelvic curve, are bent *backward* so that the handles, when placed horizontally, lie about three and a half inches above the plane of the posterior curve of the blades. This Tarnier-curve makes it possible to bring the blades well forward in the sides of the pelvis, without subjecting the soft parts above, or the perinæum below, to pressure. A transverse screw, crossing the handles below the lock, approximates the blades to the surfaces of the child's head. 2. Two movable traction-rods are attached to the lower curvature of the blades. These rods are curved to correspond with the lower border of the shanks, to which, when not in use, they are affixed by projecting pegs. When the instrument is adjusted, the outer ends of the traction-rods are detached and inserted into a socket-joint belonging to a strong steel bar with a downward curve, and furnished with a transverse handle which can be moved in any direction by means of a universal joint. Tractions are made by means of this transverse handle alone. As the head descends, the handles proper rise upward and serve as an index to show the direction in which the force should be exerted. By simply raising the traction-rods in a line with the curved shanks, the blades of the forceps swing always in the transverse diameter, and the head follows as nearly as possible the axis of the pelvis. To one accustomed only to the familiar forceps, the facility with which delivery can be accomplished by Tarnier's instrument would seem hardly credible."

Dr. Lusk has modified the original forceps of Tarnier by "making the blades much lighter, modeling them somewhat after those of the well-known instrument of Wallace. This makes their application much easier, especially in a contracted pelvis or through an imperfectly dilated os. Instead of the very clumsy socket joint into which the traction-rods are inserted, he has substituted the key arrangement, by means of which the handle can be adjusted or removed in a few seconds. These improvements do away, to a great extent, with the unhandiness of the older model. As the solidity of the shanks prevents the blades from springing, the amount of pressure upon the head requisite to keep the instrument from slipping has been found in practice not to prove an element of danger to the child. When the head

has been brought to the floor of the pelvis, unless the occiput has previously turned to the front, it is a a good plan to remove the forceps and wait a little while to allow spontaneous rotation to take place. Indeed, it is a question whether *axis-traction* forceps should be employed *at all* at the *inferior* strait. Unless *accurately* applied to the lateral surfaces of the child's head, the backward curve—so useful *at the brim*,—is apt to cut deeply into the posterior vaginal wall as soon as the converging soft parts embrace tightly the advancing head."

PREVENTION OF OPHTHALMIA NEONATONUM.

Professor Crédé considers it demonstrated that conjunctivitis of the new-born is caused by contact with the vaginal secretion during labor, and, since cleansing and treating the vaginæ of women has not sufficed to destroy this plague, he has tried direct disinfection of the eyes. Immediately after birth, after washing out the eyes with a 20 per cent. solution of salicylic acid, he drop into them a solution of argent. nitrat. (1 to 40). He claims that this was always effective, but it was afterwards slightly modified. The eyes were washed out with water, the nitrate of silver solution (1:50) was dropped in from a glass rod, and then compresses wet in a 2 per cent. salicylic solution applied for 24 hours. Since this treatment was commenced, the conjunctival inflammation in the institution have ceased, although the vaginal douchings have been given up entirely. The irritation, hyperæmia and increased secretion caused by the treatment only last 24 hours. At the clinic (Leipzig), from 1874 to May 31st, 1880, there were 226 cases of blenorrhœa out of 2,266 births, that is, about 10 per cent. From June 1st, 1880, when the treatment was begun, to July, 1881, out of 200 cases there was *only one* blenorrhœa; and, in that case, the prophylactic disinfection had been omitted.*

HOT WATER INJECTIONS INTO THE UTERUS FOR POST-PARTUM HÆMORRHAGE.

During the past few years this method has been more and more frequently resorted to, and with very gratifying success.

*American Journal of Obstetrics, January, 1882.

It is a prompt and reliable hæmostatic in cases of uterine atony, and has the additional merit, of thoroughly cleansing the cavity of the womb, besides producing a tonic and lasting retraction of the uterine muscle. The temperature of the water should be *as hot as the patient can bear*, and the syringe-nozzle should be of *hard-rubber*, which is a poorer conductor of heat than the *metal* tube and does not burn the patient as the latter does. The water should contain about 2 per cent. of carbolic acid; and should always be in readiness with every case of labor (together with a *new* Davidson syringe), to avoid the delay of heating it after the emergency has arisen. Dr. Lusk writes as follows:* With rare exceptions, the uterus responds *at once* to the stimulus of ice applied to its inner surface. Should it *not* do so, however, hot water, of about 112° Fahr., should be injected into the uterus, care being taken to expel all air from the syringe before beginning. The injection should be made slowly and without force, allowing the water to escape *pari passu* with its introduction. Although, as a precaution, I still keep within easy access one of the per-salts of iron as an additional resource in case of urgent peril, since the introduction of hot water injections as a reflex excitor of uterine contractions I have never found it necessary to resort to their use. This I consider fortunate; for, though there is abundant testimony as to the efficacy of the per-salts of iron in *post-partum* hæmorrhage, the arrest of the flow appears, in some cases at least, to have been achieved at too dear a price.

Dr. Geo. T. Harrison,† of New York, says that he has used for years with entire satisfaction, the intra-uterine injection of hot water, made antiseptic by carbolic or salicylic acid, for the expulsion of the retained ovum in cases of abortion where the membranes have ruptured and the liquor amnii has escaped. *Warm* injections for this purpose were used years ago by Levret and Baudelocque, and even as early as the time of Albucasius, but the improvement of the present day is, the *high temperature* of the water and the use of *antiseptics*.

*Science and Art of Midwifery. Page 511.

†Gaillard's Medical Journal, November, 1881.

RUPTURE OF UTERUS SUCCESSFULLY TREATED BY DRAINAGE.

In the Philadelphia *Medical Times* (Oct. 22d, 1881), appears the report of two cases of rupture of the uterus. In each case the child and placenta were delivered through the vagina. In the first case (reported by Dr. Morsbach), both the placenta and the child had escaped into the abdominal cavity, except one foot, which was still within the uterus. Two thick caoutchouc drainage tubes were put into the rent, and a pad of salicylated wool between the thighs. Slight fever followed, lasting a little over a week, with abdominal tenderness and tympanites. One drainage-tube was removed the next day, and the other on the fourth day. The patient got up on fourteenth day.

The second case occurred in Berlin, and is reported by Dr. M. Græfe. The child was in the abdominal cavity, the placanta in the uterus; and *the peritonæal cavity contained much clotted blood and meconium.* It was washed out with a 2½ per cent. of solution of carbolic acid, and a thick drainage tube, 30 centimetres long, put into the abdominal cavity, and secured by a silk suture to the posterior commissure. A bandage was put around the abdomen, and on it an ice-bladder. During the first two days, the pulse was hardly perceptible. Hiccough and vomiting were troublesome during the first five days. The temperature did not rise until the sixth day, when she began to have evening exacerbations of fever, which continued until the beginning of the fourth week, after which the temperature was normal. After the sixth day, the parts were irrigated from one to three times a day, through the tube, with a 2½ per cent. solution of carbolic acid. The tube was removed on the thirtieth day; and the patient left the hospital well and strong on the thirty-fifth day.

Dr. Græfe remarks, that whatever be the position this treatment will ultimately take, as compared with laparotomy in these cases, there can be no doubt of its advantages in country practice, where the necessary assistants, instruments, &c., for laparotomy often cannot be had in time to be of service.

Dr. Richard Frommel* reports eight cases—seven treated by

*Zeitschrift für Geburtshulf und Gynäkologie, Bd. v., Heft ii.

laparotomy—all of them fatal; and one by drainage, which recovered, which result led to the mode of treatment adopted in the two cases reported above.

PORRO'S OPERATION.

The characteristic feature of this operation lies in the *removal of the uterus and ovaries, after the performance of Cæsarean section.* Its technical name is "Cæsarean Ovaro-Hysterectomy." The operation was really first performed by Dr. Horatio R. Storer, of Boston, July 21st, 1869; but his case died in 68 hours, and it remained to Professor Edward Porro, of Pavia, to reap the reward of success, by having his name attached to the operation. He operated first on May 21st, 1876. "The patient had a rachitic pelvis with an antero-posterior diamater reduced to *one inch and a half.* The child was extracted living, and the mother survived. The preparations and details of the operation are the same as in Cæsarean section, with the exception of those which refer to the ablation of the uterus and the prevention of hæmorrhage. Careful attention to the details of antiseptic surgery appears to be essential to success. In Porro's first case, the abdominal incision was nearly 5 inches in length. After opening the uterus and removing the fœtus, the placenta, and the membranes, he lifted the emptied organ from the abdomen, and placed the wire-constrictor of Cintrat around the lower segment, just above the os internum. The tissues were then constricted until all hæmorrhage from the cut uterine surface was arrested. The uterus was then cut away with a bistoury, the stump was brought outside of the abdominal wound, and held in position by strapping the handle of the wire-constrictor to the patient's right thigh."*

According to Dr. R. P. Harris, the number of operations performed up to June, 1881, was 71, with 30 recoveries and 41 deaths.

*Lusk's Science and Art of Midwifery. Pages 412-413.

MÜLLER'S OPERATION.

Professor Müller, of Berne, has modified Porro's operation by "enlarging the first incision upward sufficiently to enable an assistant to lift the uterus outside of the abdominal walls, and by applying compression above the cervix (either with the wire *écraseur* or Esmarch's bandage) *before opening the womb and removing the child.* This plan offers the obvious advantage of *rendering the operation bloodless*, and of *making it easy to prevent the entrance of amniotic fluid into the abdominal cavity.*

The compressors which have, so far, been employed are the Cintrat *serre-nœud*, the chain écraseur with a Péan attachment rendering it possible, after detaching the chain from the handle, to maintain the constriction, and the various forms of wire *écraseur.* Compression should be made slowly, and should not be carried to the point of cutting through the peritonæum. Owing to the great liability of wire to break, great care should be taken in its selection. A second instrument should be held in readiness, in case of accident. Elliott Richardson* employed two stout steel pins, about 5 inches in length, and the size of a number 8 bougie, French scale. These he passed through the cervix,—one above and the other below the wire, and diagonally to the line of the abdominal wound. "A piece of stout silk cord previously soaked in carbolized oil (1 part to 11) was tied tightly around the cervix between the two pins exactly in the line of the temporary wire loop, which latter was removed as soon as the permanent ligature was applied but before it was finally fastened. The silk ligature was wrapped twice around the cervix and then tied. The uterus and ovaries were then cut off with scissors at a point about three-quarters of an inch above the ligature, and the stump placed at the lower angle of the abdominal wound. Careful sponging of the cul-de-sac of Douglas with carbolized sponges removed a very small quantity of bloody serum, after which he proceeded to close the abdominal wound by interrupted silver sutures, of which twelve were inserted—four of them superficial and the remainder deep, inclosing about half an inch of the peritonæum on each side. The stitches were sup-

*American Journal of Medical Science, January, 1881.

ported by long strips of adhesive plaster. Pure liquid carbolic acid was applied carefully to every part of the stump outside of the ligature, plates of lead placed under the pins to protect the integuments from undue pressure. and carbolized gauze (prepared after the method of Lister) applied to the whole extent of the wound and the exposed stump. This was completely covered with carbolized Mackintosh, and the whole kept in place by a flannel binder. No drainage tube was introduced. The patient was immedately placed in bed, and a hypodermic injection of a quarter of a grain of the sulphate of morphia was administered.

THOMAS' OPERATION, OR LAPARO-ELYTROTOMY.

"In Professor Thomas operation, the dangers of opening into the peritonæum and wounding the uterus are avoided by incising the walls of the abdomen in the line of Poupart's ligament, lifting the peritonæum and dissecting down to the vagina, dividing the vagina transversely, and then, having reached the cervix, extracting the child through the passage thus artificially created."*

After detailing several successful cases (one by Thomas, two by Skene and one by Gillette), Dr. Lusk remarks: "The foregoing results present scarcely a parallel in obstetric surgery. They ought certainly to inspire the profession with a confidence at least equal to that enjoyed by the rival procedure of Porro. The question to be decided in the future is, as to how far laparo-elytrotomy is adapted to general usage. It is possible that the suceesses so far obtained have been largely due to the exceptional merits of the operators who have undertaken it. With the present experience, it would seem as though it ought to receive the preference in all cases, where the dilatability of the cervix is such as to allow delivery by forceps or version (after the artificial passage has been formed) to be accomplished with ease and celerity.

"The vaginal hæmorrhage noted in the cases of Ritgen and Boudelocque can apparently be avoided by *tearing* the vagina

*Lusk's Midwifery. Page 415.

transversely, as recommended by Thomas, instead of incising it with a bistoury."

For the detailed steps of the operation I refer you to an excellent paper by Dr. Henry J. Garrigues, in the New York *Medical Journal* for October and November, 1878, from which Dr. Lusk has copied, into his book on Midwifery, the description of the operation.

In the New York *Medical Journal* for May, 1882, is an excellent article by Dr. Wm. Polk, entitled, "Landmarks in the Operation of Laparo-Elytrotomy," which contains some practical suggestions with especial reference to the *avoidance of the ureters.* Dr. Polk says: "The *special dangers* attending laparo-elytrotomy are four in number: 1st, opening into the peritonæal cavity; 2nd, hæmorrhage; 3rd, wounding the bladder; 4th, wounding the *ureter.* In an excellent paper on this operation, by Dr. Garrigues, all these points were exhaustively considered and made clear, excepting the last. The *first* danger, that of opening into the peritonæum, may be avoided by making the incision in such a manner as to reach the *sub*-peritonæal space *below* the reflection of the peritonæum, and then with gentleness pushing this membrane up from its attachments in the iliac fossa at the brim of the pelvis, and in the anterior pelvic fossa as far as the cervical wall. The danger from hæmorrhage may be avoided by no longer using the *cutting* instrument *after penetrating the fascia transversalis*, using from that time on a *tearing* force and the actual cautery. The position of the *bladder* may be determined by inserting a sound, thereby enabling the operator to avoid injuring this viscus.

"The points with reference to the *ureter* are very fully considered by Dr. Garrigues in his admirable article upon this operation; but, unfortunately, his experiments and observations were made exclusively upon *non-pregnant* subjects. He advises that the incision be made low down, so as to enter the vaginal canal *below* the ureter. I have now done this operation twice on the dead subject, the first time a year ago. In the first operation, in order to reach the vagina at the line suggested by Dr. Garrigues, after crossing the pelvic brim I found it necessary to hug the

pelvic wall until a point *below* the level of the ureter was reached. Then, going inward, the vagina was easily found. All loose tissues being now pushed upward, the wooden plug in the vagina was made to carry its wall upward and outward along the pelvic wall until it reached the brim. An opening was then made, and the child extracted. Examining the ureter afterward, it was found greatly stretched and slightly lacerated. This was readily accounted for, when it was seen how greatly it had been displaced from its normal position. This position, describing a curve from behind forward and from above downward, reaches a point about an inch below the pelvic brim, opposite the line of incision into the vagina; but, in the passage of the child's head and shoulders through the opening, the ureter (*being above*) was so far displaced that it described a curve from behind forward, but also from below upward, reaching far enough above the brim to permit the passage of the child's head between it and the brim. This great displacement, as has been said, proved disastrous. This circumstance suggested to me the advisability of approaching the vagina more directly, so as to reach it *above the ureter*, hoping to avoid injuring this tube, not only in the *early* steps of the operation, but also in the *later* ones of *delivery*, and thus remove one of the greatest objections to this operation—an objection which has in great part stood in the way of its adoption as a substitute for the Cæsarean section, and possibly for certain cases of embryotomy.

"Before proceeding with his *second* operation (which was done upon the body of a murdered woman in the seventh month of pregnancy) he cut through the *linea alba* just above the pubes, down upon the bladder, entered this viscus, and inserted a probe into the left ureter, thus definitely marking out its locality. The incision for laparo-elytrotomy was then made; but, on reaching the pelvic brim, *instead of keeping along the pelvic wall*, he hugged *the lower surface of the peritonæum*, passing directly to the cervical portion of the uterus, then down along this to the vagina, which was clearly defined by the wooden plug within. By means of this plug the vaginal wall was now pushed along the opening so as to rest against the pelvic brim. All tissue easily displaced was pushed down the vaginal wall below the brim, and an inci-

sion was made into the canal about three-quarters of an inch below the cervico-vaginal junction, directly through the lateral wall. The cut was made parallel to the pelvic brim. The opening was next enlarged in the direction of the incision until sufficient space was obtained to permit easy access to the cervix. Seeking now for the ureter, easily found owing to the probe, it was seen to be *below* the incision, well out of reach of danger. Delivery by version was next accomplished. While dragging out the child frequent examinations of the ureter were made, and after delivery it was carefully looked over. During extraction it was pressed downward and against the pelvic wall, its displacement being trivial. After extraction it was found just below the rent, in its normal position, and, as shown in the specimen, intact.

"He felt the necessity for careful study of this subject, both before and after operating, for the purpose of establishing definite rules for guidance in locating the ureters in cases calling for this or kindred operations. The best description he had found of the position of the ureters was that given by Dr. Garrigues; but in *his* (Dr. Polk's) cases, it was unsatisfactory, for the reason that the observations were made on *non-pregnant* subjects, and the relations within the pelvic canal were in the main such as exist between the ureters and the uterus and vagina,—*movable* bodies. For guidance, then, especially in operating from without inward, he thinks it better to locate the ureters with reference to *bony*, or *fixed*, points.

"In the first place, he has found that *ureters do not follow the pelvic wall to a point near the ischial spine*, as in the *non-pregnant* condition. He has found their courses to be as follows: Crossing the pelvic brim at the common iliac, bifurcation (the left just behind, the right just in front of, that point) they descend into the canal to the brim of the bony pelvis, the point being about the synchondrosis. In this course, they accompany the internal iliac artery, the right ureter in front of the vessel, the left crossing it obliquely. Reaching the bony brim (the ilio-pectineal line), they *leave the pelvic wall*, emerging from beneath the base of the broad ligaments (in pregnancy about on a level with the pelvic brim, and carried back on a line with the synchondrosis), and take a

course downward, forward, and somewhat inward, passing about midway between the pelvic wall and the cervico-vaginal junction, but approaching very closely the antero-lateral wall of the vagina, as they turn more decidedly inward, on a lower plane, to strike the base of the bladder three-quarters of an inch below the cervix, terminating finally in the bladder at a point (subject being on the back) just two inches below the spine of the pubes.

"A line drawn from the bifurcation of the common iliac to the spine of the pubes corresponds in the main to the line of the ureters. Along this line, they have the following relations to the pelvic brim (in the recent state): At the bifurcation, half an inch below; at the extremities of the transverse diameter of the pelvis, about an inch; and at the spine of the pubes, two inches below. As a whole, the tubes in the pelvis are situated upon a higher plane than in the *non-pregnant* condition, having been carried slightly upward while being separated from their close relations with the pelvic wall by the ascending uterus. How far they may be elevated in a case of extreme pelvic deformity with a pendulous abdomen, with the uterus correspondingly displaced, he is unable to say; but he thinks it probable, that, the bladder being empty and not dragged upward, thus preserving the normal position of the vesical end of the tubes, the displacement would not be such as to bring any part of them much above the points indicated.

"Another matter, which he took occasion to investigate in the last subject, was the grounds of the objection to operating upon the *left* side. In view of the strong probability that the operation can be done on the same side *but once*, this is a very important question. As already stated, he did the operation upon the *left* side, the vessels being injected with plaster, and the rectum distended. As is well known, the *rectum* is the supposed obstructor. He found that it offered no such obstacle as has been supposed; and that the operation was as feasible upon one side as upon the other. After the operation, this organ was carefully examined, and found in no way disturbed. In looking at its position, this was readily accounted for: it lies *behind the broad ligament*. In entering and leaving the pelvic canal, we cross the brim between the base of the broad ligament and the posterior

surface of the bladder. This latter is about on a line with the ilio-pectineal eminence, while the former is as far back as the synchondrosis; here is ample space for manipulation and extraction.

"The important structures that he regards as most likely to suffer are the vessels going to the uterus through the broad ligaments. These, by being stretched and dragged upon in extraction, might be torn, if the sides of the incision were not carefully supported in cases requiring powerful traction. He considers, then, that the rectum is far enough back not to be an impediment, and that, while the operation upon the *right* side is, perhaps, more convenient for the operator, yet so far as the interest of the patient is touched, it is as feasible upon one side as upon the other.

"To avoid lacerations of the cervix, and their probable extension into the body of the uterus, it is necessary to tip the uterus as far as possible over to the side opposite the incision, *so as to bring the cervix above the brim;* then, in extracting, the child should be made to hug the pelvis closely; for, if we make traction in an *upward* direction, the strain upon the *lower* segment of the uterus is, in many cases, greater than it can bear."

GYNÆCOLGGY.

The progress of this branch of medicine during the past decade—particularly in the direction of *abdominal surgery*—has been truly phenomenal; and it is *in this domain especially*, that the striking efficacy of the *antiseptic* method is exhibited.

At a recent meeting of the Royal Medical and Chirurgical Society, of London, (*Lancet*, January 15th, 1881,) Mr. Knowsley Thornton read a paper "*On 172 Antiseptic Abdominal Sections, with Remarks on the Causes of Death in Fatal Cases.*" In the author's hands, *pure* Listerism had reduced the mortality, in ovariotomy, from 23.94 per cent. to only 4 per cent., "a result altogether beyond the mere improvement to be expected from increased experience in performing the operation." The general conclusions

drawn from the whole 172 antiseptic operations were as follows:

1. Simple cases recover under Lister's method, with a certainty previously unknown.

2. There is less fever, and convalescence is more rapid, than under the old method.

3. The success obtained in the more complicated cases is in proportion to the exactness with which the antiseptic method can be applied to the individual cases.

4. The accidents and complications occasionally following operation, such as hæmorrhage for example, are more easily overcome in aseptic cases.

5. There are difficulties and some dangers in the application of the method; and the more experience the individual surgeon has in it, the more readily he foresees and avoids these, and the more complete becomes his success in applying it.

In conclusion, the author points out how much peritonæal surgery owes to Mr. Lister, and how much *more* to *Spencer Wells:* without the untiring energy and success of the latter, it would never have been in the position to benefit by the method of the former.

WHAT IS THE PROPER FIELD FOR BATTEY'S OPERATION?

At the meeting of the American Gynæcological Society in 1880, Dr. Robert Battey, of Rome, Georgia, read a paper in which he took the same ground that he held in 1872, when he commenced the operation, namely, that the operation is *never* to be one of *election.* "It is not a question," he says, "as to whether extirpation of the ovaries is to be resorted to, or valerian or assafœtida be given, or resort be had to any other known resource of gynæcology; but the case *must be narrowed down to this, as the only expedient available.*"

He regards the operation as justifiable in the following classes of cases:

1. Congenital absence of the uterus, coupled with ovulation, in which, at the menstrual epochs, there are violent vascular and nervous perturbations that are either dangerous to life or destructive to the health and happiness of the patient.

2. Complete occlusion of the utero-vaginal canal.

3. Certain cases of menstro-mania, absolutely incurable by any of the known resources of medical science or art.

4. Ovarian epilepsy.

5. Certain cases of chronic ovaritis.

6. Certain cases of amenorrhœa.

7. Ovarian hernia.

8. Submucous and interstitial fibroids.

9. Incurable flexions of the uterus.

10. Cæsarean section.

In deciding whether or not he should advise the operation, he always asked himself three questions:

1. Is this a grave case?

2. Is it a case incurable by other known resources of medical and surgical art?

3. Is it curable *by the menopause?*

If *all* are satisfactorily answered in the *affirmative*, he regarded the case as a proper one for the operation. If *either* question *cannot be answered satisfactorily*, he regarded the case as one in which the operation is *not justifiable.*

In this connection, it is a pleasant and grateful task, to allude to a successful case of Battey's operation, done for the relief of menstro-mania, by Dr. T. B. Wilkerson, of Young's Cross-Roads, Granville county, N. C.* The patient was a young lady of seventeen, highly educated and wealthy, but with a hereditary tendency to melancholia on the father's side. She began to menstruate at fifteen, was regular for 8 or 9 months, then ceased to have the monthly flow, and suffered with the various nervous phenomena of amenorrhœa. At sixteen, the menses returned, but were attended with severe neuralgic dysmenorrhœa; and the patient, prior to each period, suffered from "general malaise, frontal headache, pain under left breast, dyspeptic eructations, bearing-down, weighty sensations in the pelvis, severe lancinating pains over both ovaries, which were exceedingly sensitive to the touch; deep, dull, uneasy feeling in the sacral region, with an icy coldness extending down the hips and thighs. The con-

*See North Carolina Medical Journal, July, 1881.

tinuance of these symptoms did not seem to impair the general health; appetite good, but bowels constipated."

She subsequently, at the age of seventeen, became a raving maniac, "with the one sexual idea always in the ascendant." She had had "the best medical treatment obtainable for two years without benefit." Finally, Battey's operation was proposed, acceded to, and performed on August 10th, 1880, the *abdominal* section being resorted to with antiseptic precautions, and the ligatures (*silk*) dropped into the abdominal cavity.

The mental condition gradually improved after the operation; and three months after that date, "sanity was perfectly restored."

Nine months after the operation, she was "gay and lively, with ruddy cheeks, and in the full enjoyment of a vigorous mental and physical health."

This case has been said, by critics, to be one of a class which requires only some pronounced and positive physical impression to be made upon the nervous system in order to rouse the mind from its clouded gloom and despondency; and it has been said, that the *amputation of a limb or a finger* would have secured the needed "impression" quite as efficiently as *the ablation of the ovaries*. But it seems, to me, more rational, to attribute the favorable result to *the removal of a very evident and positive irritation located in the hyper-sensitive ovaries*, associated, as it clearly was, with perverted function of these organs, and such unnatural exaltation of the sexual instinct as amounted to actual disease.

At all events, the *oöphorectomy accomplished the cure*, and is entitled to the credit. It is, likewise, far less of a "mutilation," under the circumstances, than *the amputation of a limb* would have been.

LISTER'S ANTISEPTIC METHOD AS APPLIED TO OVARIOTOMY.

Mr. Knowsley Thornton describes this procedure:* The abdomen is washed by the nurse before the operation with a 5 per cent. solution of carbolic acid, and a cloth soaked in this solution is light-

*American Journal of Medical Science, July, 1881. Page 581.

ly bandaged on until the operation begins. All the instruments, ligatures, &c., are placed in trays containing this solution, which is diluted with warm water to 2½ per cent. shortly before the operation. The strength of the solution in the spray-bottle is also 5 per cent., which is diluted by the steam of the spray-producer to about 2½ per cent. The sponges—(always well cleansed after each operation by ammonia and by sulphurous acid—1 to 8)—are kept in a 5 per cent. solution, and during the operation are washed in warm water, and then in a 2½ per cent. solution. Carbolized gauze is applied directly over the wound, is strapped on, and not removed until ten days after the operation, by which time the wound will (in 99 cases out of 100) be found healed by the first intention, so that it is not necessary to use the spray in removing the ligatures. Carbolized gauze is again put on, and the patient goes out with the wound quite healed.

FREUND'S OPERATION OF TOTAL EXTIRPATION OF THE UTERUS.

This formidable operation has been successfully accomplished in the past few years for malignant disease of the uterus. Its merits and final status, however, are still *sub judice*.

"The Chicago *Medical Gazette*, quoting from 'Schmidt's Jahrbucher,' gives the following statistics of this procedure: Freund has performed 14 operations, with 8 deaths, 5 recoveries, and 1 incomplete operation. Of the 5 recoveries, one died of a return of the cancer, one from pleurisy, and a third is now suffering from a return of the disease. Of the remaining 25 operations whose results are known, which have been recorded by various operators, 19 died, 5 recovered, and in one case the operation was incomplete. Of these 5 successful cases, the cancer returned in three."* Freund's method is by *abdominal* section. In the *American Journal of Medical Sciences* for January, 1882, Dr. Christian Fenger, of Chicago, has an elaborate paper on "The Total Extirpation of the Uterus *Through the Vagina*," in which he characterizes the operation as "one of the latest conquests of antiseptic surgery." He gives the statistics of the operation up to September, 1881, not including his own case, successfully done at

*Thomas on Diseases of Women. Page 598, fifth ed.

that date. There had been 45 operations in all, with 31 recoveries, 11 deaths, and 3 unfinished operations; that is, 69 per cent. recovered, 24 per cent. died, and the operation was not completed in 7 per cent. of the cases. The author remarks: To Shrœder, of Berlin, we are indebted for our knowledge of the comparative safety of the operation, as in 1881 he issued a most brilliant statistical report of 8 operations, with 7 recoveries and only 1 death, which was not caused by peritonitis or septicæmia, but from a probably unavoidable internal hæmorrhage from a ruptured vessel in one of the broad ligaments.

In his final summing up at the close of the paper, he says: "We must naturally ask ourselves, Does suffering humanity *gain* anything by this operation? or, in other words, Does the operation enable us to *save*, or only to *prolong*, life, and is it worth while for patients having uterine cancer to undergo this severe operation?

"By total extirpation of the uterus we desire to gain something *more* than the mere cessation of fetor and hæmorrhage, because we can obtain this by partial and very much less dangerous operations. We want to obtain *perfect recovery*, if possible, or, at any rate, *health for some years*, to compensate for the serious operation.

"In making a total extirpation of the uterus for cancer, we have the right to expect nothing more and nothing less than from the extirpation of cancer in other portions of the body. The immunity from a relapse of the cancer depends partly upon the anatomico-physiological characteristics of the malignant growth, and partly upon the successful removal of all the diseased tissue by the operation. From the statistics of the cases operated on, we learn that in about 50 per cent. the cancer set in *in loco* within a few months after the operation; and in regard to the remainder, the successful operations, the period since their performance had been too short to admit of our learning anything about definite cure. We do not need to be reminded, however, that the removal of malignant tumors in almost any part of the body except the ovaries is, and always has been, regarded as a procedure which the surgeon undertakes rather as a kind of traditional duty, than from any hope of thereby gaining for the

patient a radical cure, or even, in *all* cases, a longer lease of healthy life.

"What the final answer to the question asked regarding the vaginal extirpation of the uterus for the cure of cancer will be, we do not know. But with sufficient skill and in careful hands, this operation does *not* involve an amount of *unavoidable* danger considerable enough to prevent us from being justified in resorting to it when indicated in a disease which we know to be necessarily fatal, and with full confidence in our ability to make the method of operation still more perfect, and so lessen its dangers—a result which can be obtained, *not* by sterile *à priori* reasonings as to the right of its existence, but only by an earnest and impartial trial."

REMOVAL OF UTERINE APPENDAGES FOR ARREST OF UTERINE HÆMORRHAGE.

In a recent paper* on this subject, Mr. Lawson Tait says that his experience seems to warrant the conclusion that mere removal of the *ovaries alone* is not a certain method of *arresting menstruation*, whilst removal of *the Fallopian tubes* as well as the ovaries seems to be so. He details 31 cases in illustration of the latter part of this statement, and deduces therefrom the following conclusions:

1. That as far as its *primary* results are concerned, removal of the uterine appendages for the arrest of intractible uterine hæmorrhage is an operation quite as easily justified as any of the major operations in surgery.

2. That, so far as its *secondary* results are yet known, it is an operation which yields abundant encouragement for its further trial.

3. That the whole subject is worthy of careful study, and should not be made the subject of premature and hostile conclusions.

He thinks that three of his cases show that the arrest of menstruation by this means leads, or may lead, to the atrophy of the tumors: and says, further, that "there is some close connection

*American Journal of Medical Sciences, January, 1882.

(here pointed out for the first time, and worthy of very clear study) between uterine myoma and its accompanying hæmorrhages, and cystic disease of the ovaries. In two of the thirty-one cases reported, the *cystic* disease seemed to be the *cause* of the hæmorrhage, *without any myoma intervening*."

THE CURABILITY OF UTERINE DISPLACEMENTS.

Dr. P. F, Mundé, the editor of the *American Journal of Obstetrics*, draws the following conclusions as to displacements of the womb:*

1. *Recent* displacements are the only class which offers a fair chance of *complete* recovery by any of the mechanical means at our disposal.

2. Of these means, *pessaries* are the most convenient for temporary relief; but only in a comparatively small number of cases does *permanent* cure result.

3. The best curative means of support of the displaced uterus is probably the systematic and intelligent use of vaginal tampons, impregnated with a mild astringent solution.

4. Posture, while excellent as a means of relaxing the uterine supports and relieving pelvic congestion, is by its inconvenience at best but a means of *temporary* relief.

5. Permanent relief—CURE—can be expected and will be obtained *only when the displacement is of recent origin*, especially when it has been produced by some sudden physical shock; or when the complete tissue-metamorphosis accompanying puerperal involution aids in restoring to the uterine supports and the uterus itself their original and healthy tone.

This fortunate circumstance must be looked upon as decidedly the exception, since the favoring circumstances mentioned above are but rarely met with or the displacement is seldom recognized at a sufficiently early date to permit of a perfect restoration to health.

6. The most favorable period, therefore, for the treatment of a uterine displacement or distortion with the view to a *permanent*

*American Journal of Obstetrics, October, 1881.

cure is within one or two weeks after delivery, before the woman has left her bed.

7. The excitation of a certain amount of plastic exudation in the walls of a flexed uterus may—if kept within bounds—result in a permanent straightening of the organ. This may be accomplished by rapid dilatation, or by the protracted wearing of stem-pessaries; but *permanent* success will, at best, be rare.

8. The protracted wearing of astringent vaginal tampons, introduced daily, offers for some cases of ante-and retro-displacement an excellent, and for most cases of procidentia almost the only, efficient and safe remedy for the displacement, far superior to all steadily-worn hard or soft pessaries. A procidentia of uterus or vagina may even be *cured* by several months of this treatment, if the affection be not of too long standing.

9. While permanent cure is only occasionally met with, so much *relief* is afforded by pessaries and the other mechanical supports and methods above noticed, that they should in no case be discarded, unless all treatment be contra indicated

10. Electricity, if rationally and scientifically applied for a sufficiently long period, offers chances of cure of comparatively recent cases, which call for a more thorough and persistent trial of the method.

11. For prolapsus uteri et vaginæ, unless of quite recent origin (see tampons), an operative constriction of the vaginal canal and a restoration of the relaxed or destroyed perinæum to its normal state is the only sure means of cure; and even for this affection the *unfailing* method remains still to be discovered.

12. The *cure* of a flexion by operative (bloody) treatment is impossible; the *canal* may be made comparatively straight by a division of one or the other or both lips of the cervix, but the flexed shape of the organ still remains. Only by gradually increasing elevation of the fundus by a vaginal pessary (Thomas' cup is the best), after delivery, or by the protracted wearing of an intra-uterine stem, can, in a small proportion of cases, a *permanent cure* be effected.

ESMARCH'S BANDAGE IN THE REMOVAL OF LARGE FIBROIDS BY GASTROTOMY.

Abdominal section for the removal of large uterine fibroids is now a recognized operation in surgery. At a recent meeting of the Paris Academy of Medicine, Dr. Léon Labbé suggested the use of Esmarch's bandage as an improvement of the operation of hysterectomy for uterine fibroids. He takes the ground that as the quantity of blood contained in these enormous uterine tumors is always considerable, it is certain that the *loss* of this blood by the removal of the tumor is a factor whose importance cannot be denied, especially if we consider that the extirpation of these tumors almost always takes place in the cases of patients who are already in an advanced stage of cochexia. Taking his idea from Esmarch's method in amputations of the extremities, the thought occurred to him that the same bandage could be used to press back into the general circulation the blood contained in large uterine fibroids, and thus accomplish a sort of transfusion.

The theory which led M. Labbé to this application of Esmarch's bandage was fully justified by the effect in the case reported by him; for, although the patient died six days after of septicæmia, examination of the enormous tumor at the time of its removal, proved that it had been entirely exsanguined, and that but little short of *a quart* of blood had by this means been returned to the system of the patient. The peculiar conformation of the tumor in the case reported was such that no special method was employed; but if the tumor to be removed should be more regular in form than his was, there might be some difficulty in the application of the elastic bandage. In this event, to fasten the bandage and give it support, he suggests that the tumor be transfixed near its summit by one or more metallic needles. Several of these needles may even be placed at different heights, so as to give support to the bandage, and to prevent its slipping. Upon this report he formulates these two propositions:

1. That there must be a positive advantage in operations on large uterine fibro-myomas removed by gastrotomy, in restoring to the patient the blood which these tumors always contain in large quantity.

2. That this result may be secured in a complete manner by applying to the tumor Esmarch's compress, or any other compress endowed with the same elastic properties.*

THE REMOVAL OF UTERINE FIBROIDS BY THOMAS' "SPOON-SAW," OR "SERRATED SCOOP."

The invention of the spoon-saw, by Dr. T. G. Thomas, for the removal of uterine fibroids has given the gynæcologist a great advantage over the older methods of surgical treatment of intra, uterine fibroids by enucleation. Dr. Thomas thus describes the instrument and his method of using it:

"It consists of a steel spoon with a strong handle 12 or 13 inches long. The spoon itself is slightly convex upon its outer and concave upon its inner, surface, while its borders are serrated. The saw teeth are blunt and not slanted in either direction, but perpendicular. The outer convex surface protects the uterine wall entirely, while the inner and concave surface causes the instrument to hug the tumor and run along its surface as it cuts its way laterally and upwards.

"The *method of operating* consists in seizing the tumor at its most dependent and accessible point with strong vulsellum-forceps, passing the spoon-saw up along its sides, and, by a gentle, pendulum motion from side to side, sawing through the attachments of the tumor, and freeing it entirely from its connections with the uterus."

He thus enumerates the advantages of the instrument:

1. The tumor's attachments are separated by a *saw*, which greatly limits hæmorrhage.

2. The shape of the spoon, convex without and concave within, causes it to follow of itself the contour of the tumor, unless this be very lobulated, and protect the enveloping uterine tissues from injury.

3. The highest points of attachment of the tumor are as readily reached as the lowest, the freed growth descending under traction as the saw severs its adhesions in successive sweeps around it.

*American Journal of Medical Sciences, October, 1880.

4. The saw-action gives to the process of separation, whether the growth be interstitial or submucous, sessile or pediculated, rapidity and certainty.

5th and last, though by no means least, the nature of the spoon-saw secures separation of a growth at the highest point of its attachment, leaving no peduncle to decompose.

TWO IMPORTANT GLANDS OF THE FEMALE URETHRA.

Dr. Alex. J. C. Skene,* of Brooklyn, writes as follows concerning his discovery of two important glands: "Upon each side, near the floor of the female urethra, there are two tubules large enough to admit a No. 1 probe, of the French scale. They extend from the meatus urinarius upwards, from three-eighths to three-quarters of an inch, and run parallel with the long axis of the urethra. Their mouths are found upon the free surface of the mucous membrane, within the labia of the meatus urinarius, and the tubules themselves are located beneath the mucous membrane, in the muscular walls of the urethra. The location of the openings is subject to slight variations, according to the condition and form of the meatus. In some subjects, especially the young and very aged, and in those in whom the meatus is small and does not project above the plane of the vestibule, the orifices are found about an eighth of an inch within the outer border of the meatus. When the urethral mucous membrane is thickened and relaxed, so as to become slightly prolapsed, or when the meatus is everted (conditions not uncommon among those who have borne children) the openings are exposed to view upon each side of the entrance to the urethra. The upper ends of the tubules terminate in a number of divisions which branch off into the muscular walls of the urethra. Their real importance is apparent only when their pathology is understood. Their most important pathological condition is a purulent and continuous inflammation, which extends from the mucous membrane of the ducts to the surrounding tissues. The mouths of the ducts, thus inflamed, are usually seen externally, being brought into view by a slight prolapsus and eversion of the

*American Journal of Obstetrics, April, 1880.

mucous membrane caused by swelling of the parts. Their orifices appear like very small ulcers of a yellowish-gray color. The mucous membrane of the meatus urinarius, especially in the neighborhood of the ducts, is thickened by proliferation, and of a deep-red color. The general appearance of the parts is quite like that of caruncle or papilloma of the meatus. There is exquisite tenderness to the touch; and in walking or sitting the patient suffers great discomfort, but there is no great pain during urination as a rule. In fact, the *absence of painful micturition* is the chief point in the symptomatology which distinguishes this disease from urethritis and caruncle. It has doubtless heretofore been frequently taken for caruncle; but, by the light of recent experience, the distinction is easily made. In addition to the symptoms already mentioned, it is found that by pressure upon the urethra from behind forward they discharge a purulent secretion. The effect of treatment also shows a marked distinction between this disease and caruncle.

A simple caruncle, if thoroughly destroyed by caustics or removal by the scissors, rarely returns; while the vascular growths around the mouths of the diseased glands will return after being removed by any means, and will *continue* to do so until the inflammation of the glands is cured. This explains the statement of most authors, that caruncle is very liable to return."

Vulvitis, urethritis or vaginitis may give rise to the disease; but the author considers *gonorrhœa* its most frequent cause. He states that the inflammatory action persists in the glands long after all traces of the original disease have disappeared; and that, once established, it has no natural tendency to recovery.

The treatment recommended is to touch the inflamed papillæ with equal parts of tincture of iodine and carbolic acid, and to inject the ducts with a solution of ʒ ij of nitrate of silver to ℥ i of water. Twice a week, subsequently, they should be injected with a solution of 2 grains of nitrate of silver to ℥ i of water, and finally borax and water should be used. For the injections, he uses a hypodermic syringe with a probe-pointed needle.

In some cases, the disease is obstinate and returns on omitting the applications. For such cases, he suggests that the duct be thoroughly laid open by dividing it from within outwards, *i. e.*

cutting through the urethral wall from the duct into the vagina, and the wound kept open until it heals from the bottom. "In a word, treat it as you would a fistula in ano."

A POINT IN THE DIAGNOSIS OF OVARIAN TUMORS.

At the International Medical Congress (London, 1881), Dr. Slavjansky,* of Russia, directed attention to a symptom which permits the diagnosis of the side from which an ovarian tumor springs to be made out more clearly than usual. It is this, that, if the *sensibility* of the two sides be compared, it will be found to be *less acute* on the side of the *affected* ovary. He cited five cases which had been operated on, in all of which the side from which the diseased ovary had grown had been correctly made out (*before the operation*) by the impaired sensibility discovered on that side in the inguinal region. He had no explanation of the symptom to offer.

THE GENU-PECTORAL POSITION FOR RETRO-DISPLACEMENTS.

We are indebted to Dr. H. F. Campbell, of Augusta, Georgia, for this valuable addition to our means of correcting retro-versions and retro-flexions; for, although Von Ritgen had recommended it as far back as 1820, Dr. Campbell was the first to systematize it as a method of "pneumatic self-replacement," and put it at the disposal of gynæcologist for daily use.

Dr. T. G. Thomas† says of it: "'Campbell's method' *never does harm*, generally effects great good as an adjunct to other treatment, and in rare cases proves in itself sufficient for complete relief. It consists simply in the *reversal of gravity* by placing the patient on her knees and chest,"—the *hips* being raised as *high* as possible, and the *chest* depressed as *low* as possible so as to rest upon the table on a plane with the knees. When, now, the posterior commissure of the vulva is lifted (either with Sims' speculum or the fingers) the vagina is suddenly distended by atmospheric pressure from without, recession of the intestines and abdominal viscera towards the diaphragm is accomplished

*American Journal of Obstetrics, October, 1881.
†Diseases of Women. Fifth edition, page 119.

by the force of gravity acting coïncidently with this air-pressure, and the retro-version, in uncomplicated cases, disappears as if by magic—the uterus promptly resuming its normal axis.

"During the treatment of *all* uterine displacements, except inversion and irreducible flexion, the patient may, with advantage be directed to practice this automatic method of replacement for five or ten minutes upon retiring at night and on rising in the morning. If a pessary be worn, it will, by this plan, be relieved of much of the pressure which it bears, congestion of the pelvic viscera will be lessened, and the organs of the abdomen, being displaced upwards, will not immediately descend and depress those of the pelvis. Dr. Campbell likewise directs that a small glass tube, about as large as the largest-sized test-tube, should be introduced into the vagina by the patient, while in the "genu-pectoral" position, to secure the admission of air and its action as a "repositor," when she resorts to the use of the posture night and morning. The patient is quick to recognize the relief experienced, and readily assents, thereafter, to the somewhat awkward attitude.

KIBBE'S COT FOR FEVER AFTER OVARIOTOMY.

Dr. G. W. Kibbe has invented what he calls a "fever-cot" for the treatment of hyper-pyrexia by cold affusion. The cot is covered with "a strong, elastic cotton netting, manufactured for the purpose, through which water readily passes to the bottom below, which is of rubber cloth so adjusted as to convey it to a vessel at the foot. When not in use, it can be closely folded so as to occupy but little space Upon this cot a folded blanket is laid, so as to protect the patient's body from cutting by the cords of the netting; and at one end is placed a pillow covered with India-rubber cloth, and a folded sheet is laid across the middle of the cot about two-thirds of its length. Upon this the patient is now laid, her clothing lifted up to the arm-pits and the body enveloped by the folded sheet, which extends from the axillæ to a little below the trochanters. The legs are covered by flannel drawers and the feet by warm woolen stockings; and against the soles of the latter bottles of warm water are placed. Two blankets

are then put over her, and the application of the water is made. Turning the blankets down below the pelvis, the physician now takes a large pitcher of water at from 75° to 80°, and pours it gently over the sheet. This it saturates; and then, percolating the network, it is caught by the India-rubber apron beneath, and, running down the gutter formed by this, is received in a tub placed at the foot of the cot for that purpose. Water at higher or lower degrees of heat than this may be used; but as a rule, it is better to begin with a high temperature, 85° or even 90°, and gradually diminish it.

"The patient now lies in a thoroughly soaked sheet with warm bottles to her feet, and is covered up carefully with dry blankets. Neither the portion of the thorax above the shoulders nor the inferior extremities are wet at all; the water is applied only to *the trunk*. The first effect of the affusion is often to elevate the temperature: but the next affusion, practiced at the end of an hour, pretty surely brings it down. It is better to pour water at a moderate degree of coldness over the surface for *ten or fifteen minutes*, than to pour the colder fluid for a shorter time. The water *slowly* poured robs the body of heat more surely than when used in any other way. The water collected in the tub at the foot of the cot, after having passed over the body, is usually 8° or 10° warmer than it was when poured from the pitcher; and on one occasion, it gained 12°. At the end of every hour, the result of the affusion is tested by the thermometer; and, if the temperature has not fallen, another affusion is practiced, and this is kept up until the temperature comes down to 100°, or even less.

"It must be appreciated that the patient lies constantly in a cold, wet sheet; but this never becomes a fomentation, for the reason that, as it abstracts from the body sufficient heat to do so, it is again wet with cold water, and goes on still with its work of heat-abstraction. Ordinarily, after the temperature has come down to 99° or 100°, four or five hours will pass before affusion becomes necessary again."*

Dr. Thomas has employed this apparatus extensively after

*Thomas on Diseases of Women. Fifth edition, page 752.

ovariotomies; and he says that he "has kept patients upon this cot enveloped in the wet sheet *for two and three weeks without discomfort to them,* and with the most marked control over the degree of animal heat."

TUPELO TENTS.

This tent has grown into more general use during the past year or two. It is made of the wood of the tupelo-tree, or nyssa, which grows throughout the Southern States. Thomas says of it: "The tupelo-tent has, I feel sure, a brilliant future before it. While it will not entirely supercede sponge, it will in a great many cases replace it. It does not, upon absorption of moisture, expand as much as sponge, but it makes up for this defect by unyieldingly *maintaining its increased size* after expansion, which sponge does not."

They were introduced by Dr. Sussdorff, of New York city; and are elegantly made by the instrument-makers, with a perforation running through the center from end to end, to allow the passage of fluids or secretion from the uterine cavity while the tent is *in situ.* They may be safely left in for 24 hours, by which time all the available dilating power of which they are capable will have been developed, and a larger size may replace the one removed, if necessary.

NOZZLE FOR VAGINAL SYRINGE WITH REVERSE CURRENT.

A decided improvement over the old method of giving vaginal injections is secured by a very *simple* device, whereby the current of water, instead of passing out of the tube in a straight line continuous with the direction of the nozzle, or in oblique *forward* jets through the lateral openings, is made to issue from the openings in the tube in a *reverse*-oblique direction, at an acute angle with the axis of the syringe-pipe. This very effectually prevents the distressing and sometimes dangerous accident of injecting water directly into the uterine cavity, which, with the old arrangement, it was impossible to prevent with certainty—even by the greatest carefulness. Dangerous collapse and even pelvic cellulitis and peritonitis have resulted from injecting the undilated cavity of the uterus. With the reverse-

current, this accident is impossible. There should, of course, be *on central opening* in the vaginal extremity of the nozzle. How simple a device in *little things* may prevent intense suffering on the part of the patient, and even a serious illness!

SCISSORS FOR CUTTING DEEP WIRE SUTURES IN THE PERINÆUM

Appreciating the difficulty which not infrequently attends the cutting of the wire loops prior to removing the stitches after the operation of perinæorraphy, Dr. Bache Emmet has devised an excellent scissors for this purpose. He describes the instrument as follows: "Any one who is in the habit of operating for ruptured perinæum, and who brings his sutures together in the median line, must have felt, when undertaking their removal, that he had not at his disposal all that was necessary to facilitate his own work, and at the same time make the proceeding as little painful to the patient as possible. In fact, in most such cases, the removal of the sutures is apt to become a *bloody* operation, and is attended with great uncertainty. The fact of the loop being imbedded in the tissues and the *twisted* portion itself being for a part of its length *out of sight*, obliges the surgeon, while holding the twist with a pair of forceps, to *feel* his way with the point of the scissors down to the loop, and then to cut when he *thinks* he has reached it. The necessary groping inevitably makes the parts bleed; in fact, the recently-united parts are constantly *separated* by this searching for the loop; and, as often happens, one cuts *several* tissues before including the wire in the blades. Again it is often impossible to know whether the blades include *one* thickness of wire, or *two;* in other words, one is liable to cut the wire *above the loop*, which mishap may lead to a great deal of trouble later on.

"To overcome these various objections Dr. Emmet has devised this simple contrivance, which is simply a section of a cylinder attached at such an angle to the point of one blade of a pair of scissors, that when the groove is run on the twisted wire down to the perinæum, it is stopped by the parted wires, and the point of the scissors will be found to have engaged under the loop, so that one has but to unite the branches of the scissors to make sure of dividing the suture."*

*American Journal of Obstetrics, January, 1880.

CLINICAL REPORT ILLUSTRATING SOME OF THE COMPLICATIONS OF ORGANIC STRICTURE OF THE MALE URETHRA.

Read before the 29th Meeting of the North Carolina Medical Society, held at Concord, N. C., May, 1882.

By R. L. Payne, Jr., M.D., Lexington, N. C.

The several causes of organic strictures of the urethra so commonly affect the mass of mankind that it becomes a question how any can escape, and, indeed, if the views of Mr. Forster, of Guy's Hospital be true, we might expect every man to suffer stricture. He discards the idea that gonorrhœa can produce stricture *per se*, and asserts that strong injections have little to do with the result, whilst he advances the unique idea that stricture is due to the "intermittent stretchings and relaxations that the penis and with it the urethra undergoes * * * * if there be no *hereditary predisposition* to the disease, some slight inflammatory thickening may have taken place at the weakest spot in the healthy urethra as the result of unequal distension of the parts." This idea of causation, however, we mention only to discard, for, if the urethra is healthy, it certainly should not have weak spots as variously located as are strictures of that canal, and if simple erection of the penis is to cause so serious a trouble, *preventive* medicine, which is making such rapid progress now, might advise early castration as *the* remedy, and since women are to-day spayed upon the slightest pretext, there might not be found wanting doctors ready to emasculate the race were this theory allowed the slightest foothold. Authorities generally, however, recognize protracted gonorrhœa, or maltreated gonorrhœa as almost always followed by stricture, and again, authority is agreed that traumatism is a potent factor in its causation. In addition to these, the researches of Dr. S. W. Gross, a few years since, prove conclusively that masturbation must be added to this list of causes, for, says he, "masturbation affects the sexual powers by inducing a constant state of congestion and undue excitability of the urethra which terminates in inflammation, and the formation of a coarctation in its fixed or curved portion," and this theory, he seems conclusively to have demonstrated by clinical facts.

Of all single men who are not given to venery, many are masturbates, and when we remember that all are more or less exposed to perineal wounds and bruises, it no longer need be a matter of wonder that stricture is so common a trouble, and it becomes a matter of wonder that stricture is so common a trouble, and it becomes a matter of consequence that not only the specialist, but that every practitioner be able to diagnose and treat this disease with its many grave complications. And yet how few general practitioners have supplied themselves with any urethral instruments beyond the ordinary gum catheter, and how often do patients come under our care suffering with stricture who have been for months treated in vain, the effect being regarded as the cause, and the poor sufferer treated for enlarged prostate, gravel, cystitis, &c., &c. The text-books are sufficiently full on this subject, however, and it is with a view, not of elucidating anything new, but to call again the subject of the complications of stricture to our minds that I have made this clinical record.

STRICTURE WITH GLEETY DISCHARGE.

Case I.—July 17, B. M., came to be treated for a gleety discharge. He had gonorrhœa three years ago with orchitis. Two years since he had a second attack, with severe orchitis which confined him to bed several months, resulting in a gleet which lasted a long time and six weeks ago he contracted the third, blenorrhœa. I ordered a routine-treatment of copaiba and injections, and in a few days he had a sharp orchitis. Remedies were at once discontinued and he was placed on the antimonial and saline mixture of Gross. Extract belladonna was applied to the swollen gland and he was quickly relieved. Again, I ordered injections, again the testicles swelled and were treated as before, and this was repeated three or four times. My patient began to tire of my treatment, and I to be ashamed of it, when at length I explored the urethra with the bougie á boule, and detected a stricture of calibre 14 m. m., four inches from the meatus and a second in the region of the bulb.

August 8th. I passed a steel sound, No. 18, of the French scale, (throughout this paper no other scale is used than that of the French) this was repeated at intervals of two days, the size being gradually increased until August 24th, when the full capacity of

the urethra was reached by the passage of a No. 27 sound. The perinæum was now painted with iodine, and a No. 27 passed daily. The gleet was cured as soon as the No. 27 could be passed with ease, but the use of the bougie was continued for several days and its periodical use enjoined. During this time 10 grs. monobromide of camphor was administered at night, and a cold hip bath ordered to be taken just before retiring.

STRICTURE, EPIDIDYMITIS, AND REFLEX TROUBLES.

Case II. Feb. 15th. C. W. is very despondent and thinks he has heart disease and kidney trouble. He suffers much with flatulence and other symptoms of disordered digestion; complains of pains in the loins, uneasiness about the anus and darting pains in the perinæum. He also suffers from recurring attacks of epididymitis, which he calls *stone*-ache (a very common symptom in organic stricture). He notices that his urine is scanty, passing only a quart in 24 hours which is high colored, often voided with a sense of burning and though clear when first passed soon becomes muddy.

In closing the act of urination he often feels as if a few drops were retained which afterwards run out, soiling his clothing. (This symptom which is said to be pathognomonic of stricture, I have often seen in cases of debility from any cause and to me it is far from diagnostic).

The specific gravity of the urine is 1032. It is clear when voided but in a few hours deposits a heavy, amorphous, fawn colored precipitate, which chemical examination shows to consist of the urates of ammonia and soda with a few shreds of mucus. Tests for albumen and sugar are negative. An urethral examination defined three strictures, two in the spongy and one in the membranous portion. He received a wound some years ago in the perinæum but he has been addicted to self-pollution, and to this cause I attribute, at least, the two anterior strictures, as there is no history of gonorrhœa.

Feb. 22. A No. 9 sound was passed with great difficulty through the stricture and a gradual dilatation was effected by sounds introduced at intervals of two days, until March 2d, when a No. 24 could be passed with ease and this was passed daily for several days, when all difficulty of urination and obscure pains being relieved, he was ordered a tonic and conditionally discharged.

March 24. He reports himself well, feeling better than for years past.

STRICTURE, IMPOTENCE, CYSTITIS, &C.

Case III.—May 18th. Mr. S. came to my office complaining of difficulty of urination. Three years ago he had a clap which was at first treated by a strong injection of caustic, and was followed by an obstinate gleet. A year later he contracted a fresh blenorrhœa which has never been entirely relieved, and he has since had cystitis. His present symptoms are neuralgic pains along the urethra, great straining in the act of micturition, retention of the last few drops of urine, and a gleety discharge.

The bulbous bougie detects four distinct coarctations in the urethra, the calibre of the largest does not exceed 12 m.m. and the first is situated within ½ inch of the meatus. After prolonged effort I passed a No. 9 into the bladder. He now returned to his home, a long ride, horseback, and the same day had a chill followed by a high fever which lasted several days.

May 23. Having given him three drops of tinct. aconite root, as prophylactic of urethral fever I succeeded in passing sounds from No. 9 to 14. This amount of dilatation relieved somewhat the urgency of his symptoms and my patient did not return until to-day, (July 12) when I found him much worse in every respect and failed to pass the most delicate filiform through the last two strictures. He has been riding on a mowing machine all summer, the vibrations of which have tended to rapidly aggravate his troubles.

July 14th. After prolonged effort I succeeded in passing a No. 8 sound and this was repeated on several different occasions, but all efforts to pass a larger instrument were futile, although he was kept in bed and every attempt made to reduce irritation. I now advised internal urethrotomy which patient refused.

August 27th. My patient at length consents to be cut. He has rapidly grown worse. His urine now passes guttatim and with great effort. In sexual congress he feels as if he would have an emission, but the obstruction prevents ejaculation and the semen flows back into the bladder. He was now placed on quinine and bromide potash and ordered rest in bed with cold hip baths until the operation.

September 3d. The patient having taken quinia sulphate gr. x,

and being anæsthetized I proceeded to operate. The first stricture, near the meatus, was divided with a bistoury; the second, two inches from the meatus, with Prof. S. D. Gross' urethrotome, and the remaining two being near the bulb are divulsed until a No. 20 sound was now passed and tied in position. As soon as he came from under ether he had 1-6th gr. morphia, hypodermically and was ordered quinia sulphate and bromide potash every sixth hour.

Sept. 4th. Pulse 88. Temperature 103.2°. Catheter was removed and a No. 21 sound passed through the stricture and immediately withdrawn. The urine is scanty and loaded with mucus. Quinine was ordered in larger doses and in addition tinct. aconite root, gtt. iij, every fourth hour. Diet, milk and animal broths.

Sept. 6 h. Pulse and temperature normal. Passed a No. 23 sound, and discontinued all remedies except the following addressed to the cystitis, viz. :

℞. Fol. uva ursi, ʒ i.
Lupulin, ʒ ss.
Pulv. ergotæ, ʒ ij.

M. et ft. infus. et sig. One ounce thrice daily.

The sound was used at intervals of three days until early in October when he was discharged cured, being able to eject semen and pass urine with perfect ease. The cystitis had also yielded to treatment. Chordee which was of some trouble in the early treatment was controlled by monobromide of camphor.

STRICTURE, PROSTATORRHŒA, &C.

Case II.—August 9th. To-day, W. L., consulted me for the relief of what he thinks is a spermatorrhœa. He has a discharge from the urethra perfectly clear, transparent and ropy, and keeping up a constant moisture about the meatus. On awaking in the morning, he finds the meatus glued together and the discharge is most profuse when straining at stool. He also suffers a feeling of weight and uneasiness in the perinæum, and about the anus, is very low spirited, fears impotence, &c., &c. He has been given to self-pollution and has also had gonorrhœa I find a stricture about 6 in. from the meatus of calibre 18 m.m. with hyperæsthesia of the membranous and prostatic urethra. I treated stricture by gradual dilatation, hoping the cold steel would at the same time exercise a

a tonic effect upon the prostate, and relieve that flux. In a few weeks all symptoms of stricture were relieved, but the discharge and hyperæsthesia continued still. My patient was now ordered an injection of hydrastis, but as the symptoms were unabated in the latter part of September, I cauterized the prostatis urethra by means of the urethral syringe with the nitrate of silver (gr. xx to ℥ i). This quickly cured my patient.

STRICTURE, SPASM OF THE SPERMATIC CORD.

Case V.—September 8th. J. H. gives the following history. Six or eight months ago he had a gonorrhœa which was soon relieved by strong injections. A few weeks since he had a slight attack of epididymitis. This soon wore off only to reäppear again a day or two since with increased severity, and as a complication, he now suffers a spasm of the spermatic cord. Most of the time the right testicle is drawn firmly up against the external ring, but occasionally it will relax and contract playing fast and loose with the testicle as well as the feelings of my patient. His pulse is but little excited but the epididymis of both testicles is swollen and very tender to the touch. Thinking the epididymitis caused the spasm of the cord he was simply ordered

℞.

Ext. belladonnæ, ʒ ii.
Glycerinæ, ℥ ii.

M. et ft. sol. et sig, apply to testicles every fourth hour.

The inflammation quickly subsided, but the spasmodic action of the cord persisted. After careful consideration I could find no cause for the trouble, but the patient remarking that after urination he often felt as if some were retained—"like there was a little ball in my penis," as he expressed it. I explored the urethra and three inches from the meatus I detected a stricture of calibre 18 m.m. This was treated by gradual dilatation, the sounds being left in situ from 5 to 25 minutes. He began to improve as soon as I began to dilate the stricture, the spasm daily growing less severe and continuous, and three weeks later a No 24 could be passed with perfect ease into the bladder, and all trouble about the cord had disappeared.

STRICTURE, IMPOTENCE.

Case VI.—October 16. D. S. comes to be treated for impotence. Three years ago he had gonorrhœa resulting in a gleet which was allowed to run six months and then cured by injections. Since this time he has suffered gradual failure in sexual power until now the erections are so feeble he is unable to consummate the sexual act. Sometimes, when he tries to have intercourse, he cannot command an erection, at others he has an emission before he can enter,—mis-emission of Gross. The testes are firm and well developed, the penis looks shrivelled and wasted, he says: "*it* has fell away a sight,"—and the lips of the meatus are red, pouting and covered with a glairy secretion. He has no difficulty at all with his water but has frequent nocturnal emissions, often has "stone-ache" and wakes in the morning to find the meatus glued together. Exploring the urethra with a bulbous bougie, I define a stricture of 18 m.m. 6 in. from the meatus with marked hyperæsthesia of the membranous urethra. He was ordered laxatives, bromide potash through the day, and cold hip baths every night, just before retiring; is to avoid all stimulants, sleep on a hard bed with light covering and strictly to abstain from all attempts at sexual congress. I now attacked the stricture by very gradual dilatation until Nov. 8th when a No. 24 was inserted and allowed to remain five minutes, and this was repeated at intervals of two and three days until the first of December, at which time he was discharged cured. Under the use of the sound the sexual power was fully restored, and strange to say, there was a gradual increase in the size of the organ. (So often have I seen impotence with absent or feeble erections associated with stricture at the same time that the testes were apparently sound, that I have come to believe that the presence of the effused lymph fills up the areolæ of the penis and thus constringes its blood vessels that the blood supply necessary for erection is impossible, and I am well satisfied that the cause of chordee is the presence of effused lymph in, and consequent unequal expansion of, the erectile tissue.)

STRICTURE, PERINEAL FISTULA, DIABETES, INSIPIDUS, &C.

Case VII.—March 26th, A. B. came from a neighboring town to be treated for stricture. Thirteen years ago he contracted a

blenorrhœa which he treated himself abortively with nitrate of silver. About six years later he had symptoms of stricture and was treated at that time by an able surgeon by dilatation, and the subsequent use of the sound enjoined. He has neglected himself, however, as such patients usually do, and his stream of urine has been gradually growing smaller until about six months ago, when, after exercising on horseback, all his symptoms rapidly grew worse. He wrote to consult my father in November, and was advised at once to come to the office, but he suddenly grew worse, began to have rigors and was unable to travel. Early in February, my father, Dr. Payne, saw him in consultation, and a large perineal abscess burst as he entered the room. Up to this time it had been impossible to introduce any instrument into the bladder, but a small Gouley's catheter was now passed over a filiform into the bladder and his water withdrawn. He was afterwards very sick, had cystitis, and probably septicæmia, but to-day is the first time we have seen him since the consultation. His pulse is now 100, temperature 99.5°. He urinates with great difficulty, sometimes guttatim, sometimes in a tiny stream, and a fistula in the perinæum discharges pus and urine. He is unable to eject semen.

There are three strictures, one within ½ inch of the meatus, one much tighter 3 inches from the meatus, and a third very tight in the membranous urethra about the junction with the spongy portion. A No. 3 slippery elm bougie is the only thing which will pass into the bladder, and this, being allowed to remain in situ 20 minutes, and then withdrawn, is so firmly grasped that each coarctation leaves its impress upon the bougie.

March 28th. The urethra is very irritable, but repeated efforts were made to dilate until April 26th, at which time there was no perceptible gain. During this time he took bromide potash thrice daily, a tonic mixture, and used the hot hip-baths daily. He was, and is still passing very large quantities of urine, about two gallons a day. This is of low specific gravity, 1005, but contains no sugar or albumen, and he frequently passed small, grayish-looking gravel, probably of phosphatic nature. All efforts to dilate failed utterly, and April 26th, the patient being etherized and a filiform passed into the bladder, my father divided all the strictures with Pancoast's urethrotome. The patient reacted well, and the hemorrhage,

was slight, though a very long stricture was divided near the bulb. A No. 20 catheter was now inserted and tied in position.

April 27th. Patient is cheerful. Pulse 104. Temperature 100°. Withdrew catheter and ordered quinia sulphate, gr. ij., and tinct. aconite root, gtt. ij, every fourth hour. Diet, milk and animal broths.

April 28th. Pulse 76. Temperature 98.6°. There is much scalding in urination and the stream of urine is small, but the quantity which has amounted to a diabetes insipidus, has already become much less.

Discontinued quinia and aconite.

Thomson's sounds were now passed daily until May 4th, at which time the patient was doing well in all respects. The urine normal in quantity and quality is voided without impediment, in a full stream. The fistula is entirely healed. A No. 21 sound was introduced with ease, and having ordered a tonic treatment, the patient was discharged with the advice that a full-size sound should be passed every second day for a month, and then once or twice a month during his remaining life.

A number of other evils result from organic stricture and complicate its treatment, but these, selected at random from my note book, will serve to illustrate some of those we most commonly see in practice. Cases will be met with of retention of urine, of enlarged prostate—indeed, in my opinion, enlarged prostate is most frequently the result of the prolonged congestion caused by the irritation set up by a stricture of the membranous urethra—of atrophied prostate, of prostatic abscess, of dilated urethra, of ruptured urethra with urinary infiltration, of hypertrophied and sacculated bladder and of grave changes in the ureters and kidneys. In every case the general health sooner or later suffers. These are reflex pains, disordered bowels, and troublesome dyspepsias; the patients are often gloomy and irritable, frequently anæmic; the subjects of nervous exhaustion, and unless relief be obtained, go on from bad to worse until death closes the scene with symptoms of complete exhaustion.

"Sometimes" says the eminent Prof. Gross, "the brain sympathizes with the urinary troubles and a slow, subacute inflammation, attended with coma, is set up in this organ and in the arachnoid

membrane, eventuating at length in fatal serous effusion." In speaking, therefore, of a disease at once so prevalent, and often so grave in its results, I cannot forbear using the opportunity offered of expressing an opinion as regards its treatment, which opinion, humble though it be, will still bear the merit of being founded upon the earnest convictions growing out of a careful study of my own experience and that of the ablest surgeons.

But before taking up the subject of treatment it may be well to speak of the danger attending the most trivial operation upon the urethra. It is certainly one of the most delicately organized parts of the body, and perhaps, of all others, the most ready to resent any interference. It is also to be noted that in the subjects of old urethral stricture—as a result of the long-standing, subacute inflammation and the attendant congestion—the whole urethra is hyperæsthesic and more than ever intolerant of instrumental irritation, while the subjects of such disease are nervous and debilitated, peculiarly prone to nervous shock, and hence, easily affected by the slightest operation upon the genito-urinary apparatus.

Velpeau records a case of tetanus the day following the introduction of an ordinary bougie;—the autopsy revealed no lesion. Mastin writes of the case of a young man sick with remittent fever who suffered retention of urine. A cautious introduction of the catheter was attempted by the attendant, an able physician, but before it reached the bladder, the man had a terrible convulsion and died. Again, the autopsy was rid, the evil had resulted through the subtle influence of the great sympathetic chain of nerves and the feeble ken of man could not penetrate the mystery. Gross, and indeed all surgeons of eminence, tell us how great the danger from the gentlest handling of the catheter and in my own observation—perhaps, in that of many of you—I have seen—occasionally in private practice, frequently in hospital practice—apparently slight operations upon the part quickly followed by such grave results as urethral fever, surgical kidney and diffuse pyæmia, with its distressing accompaniments of inflammations of the articulations, and the formation of pus in the joints, muscles, veins and cellular tissue, with multiple abscesses in the lungs, kidney, liver, spleen, &c.

Again, before taking up the subject of treatment, we must decide whether organic stricture can be cured. More than fifty years ago,

Delpech declared, that the surgeon who said he could cure a stricture was trifling with the truth, and though in other fields surgery has made rapid advances as yet no one has been able to gainsay this statement. Pathologically, stricture is not curable; practically it is; for although when lymph has become organized in these parts, no power known to us will effectually remove it, still all symptoms may be relieved and held in abeyance by judicious methods. Since, then, the urethra is so liable to resent any instrumental interference, and since stricture can only be relieved and not cured, it is our duty as surgeons who exercise a due regard for the lives and well being of our patients, to choose that method of treatment which gives relief with the least risk, and to the discussion of the respective merits of these methods will be devoted the remainder of this paper. Seven plans are given by which organic stricture may be treated and we give them in the order in which we wish to speak of them. 1st. By absolute rest. 2d. By continuous dilatation. 3d. by caustics. 4th. By electrolysis. 5th. By rupture. 6th. By gradual dilatation. 7th. By urethrotomy. But little can be said of the first method except as an auxiliary to other modes. The second—continuous dilatation—is very liable to cause cystitis; is always accompanied by suppuration, leaving behind a discharge often troublesome to relieve, and is frequently productive of urethral fever. The treatment by caustics has been abandoned except in rare instances when it is used to allay urethral irritability, and favor the tolerance of instruments. With the treatment, by electrolysis, I have no experience, and hence will neither commend or condemn, but of the fifth method—by rupture—I would say it should never be used except in a few cases where the stricture is tough and cartilaginous, of long standing, and has resisted all milder methods, and even in such cases intend urethrotomy is to be preferred, for although rupture is less liable to be followed by troublesome hemorrhage than urethrotomy, it has the manifest disadvantages of being more severe, more liable to be followed by shock, urethral fever, pyæmia, &c., and as the cicatrix from a tear is more liable to be followed by contraction than that from a clean cut, its effect is less permanent than that of urethrotomy.

Our choice must then be made in the majority of instances between dilatation and urethrotomy. As regards the respective merits of these two methods there is still some controversy among our

surgeons. Some carried away by the quicker relief afforded by, and consequent greater brilliancy of, the cutting operation, forget its perils and declare it to be the only rational method; while others, more conservative, use in the large number of instances the plan of very gradual dilatation. To these last, I give my adherence, for it has been the experience of many of the ablest surgeons, that the results of dilatation are as permanent as those obtained from urethrotomy, while by this method the risk to life is reduced to a minimum; and after both cutting and dilating a large number of strictures, my own observation confirms their testimony, for as before said, pathologically, there is no cure for stricture; the utmost we can hope for is relief of symptoms, and no matter what method is used, unless the patency of the canal is maintained by the periodical use of the sound, troublesome symptoms will sooner or later recur. To this last observation there may be an exception in the case of recent strictures, for in these, before the deposited lymph has become fully organized, it is possible that the pressure of a full-sized steel sound daily used may so stimulate the absorbents as to cause its removal, and in a few instances, I think, I have thus obtained permanent cures. It is no wonder that this should be so, since we all have seen how quickly a bubo will sometimes disappear, if a weight be laid upon it, how an œdematous limb will grow less under a well applied bandage or how the swelling, remaining after orchitis, is relieved by strapping the testicle. In the use of gradual dilatation much will depend upon the patience and care with which the treatment is carried out. The urethra should never be made to bleed, and he who makes a false passage should be considered guilty of malpraxis. The kind of instrument to be preferred is the conical steel sound, but in certain tortuous strictures much may be gained by the use of soft instruments—preferably the olivary bougie—until the canal be somewhat straightened, when the sound should take their place. Only one objection could be made to soft instruments thus used, and that is—since in stricture every orifice in the urethra becomes more patent—soft instruments by catching in these or in a fold of mucous membrane may lead to errors of diagnosis, which objection would not stand, were the urethra always well explored by the bougie à boule before treatment is instituted.

The patient should be instructed to pass no water for several hours previous to the operation, and in using the sound he should

be placed in the recumbent posture with the legs semiflexed, and should breath with mouth open, as this will, in a great measure, prevent any downward pressure of the bowels or abdominal walls upon the bladder. The sound should be passed as an ordinary catheter, and if pressure be made over the *mons veneris*, downward in the direction of the feet, as the instrument is taking the second curve the suspensory ligament will be relaxed and the sound will more readily enter the bladder. The size of the instrument used should be gradually increased one or two sizes, or, as is more accurate, one or two millimetres every second or third day until the full capacity of the urethra is reached, when a full size sound should be passed daily and allowed to remain in the stricture from 5 to 15 minutes. When there is a troublesome gleet, the sound may remain even longer in situ, but any instrument used of such large size or left in position so long a time as to produce a general urethral spasm—which may be known by the tightness with which the instrument is grasped during its withdrawal—will do harm, and I have often felt that too great a hurry to relieve a patient, and consequently the use of too great force always defeated its own ends, and in some instances undid all the good which I had been days in accomplishing. To determine how far it is necessary to dilate the stricture, the urethrometer is frequently used, but it is a costly instrument, and is not itself free from error, and we have usually thought it safe to dilate the stricture until all symptoms were relieved, and then to carry the dilatation 6 to 8 mm. beyond this point to allow for subsequent contraction.

This is the manner in which we would usually manage all ordinary strictures, but it is by no means an infrequent occurrence to find a stricture of such small calibre, that the best efforts of the surgeon will fail to insert a sound in which case resort must be had to the tunnelled catheter of Gouley, and the filiform bougie. No little skill is often required in the successful use of the filiform, and I hope I may be pardoned if I give somewhat in detail the manner in which they are used by my former teacher, Prof. John Brinton, than whom there is no more conservative surgeon, skillful operator, and perfect gentleman within the ranks of our profession. First, a filiform is passed down to the stricture, and if it enter, a tunnelled catheter is slipped over it into the bladder, but if it fail

to enter it must not be withdrawn. It has caught in some fold or opening of the mucous membrane which would almost surely catch it again were it withdrawn and again entered. Let it remain, and if this fail too, pass another and another until the urethra is filled or the bladder is entered. If we finally succeed in passing the stricture —which may be known by the freedom with which the filiform may be moved up and down—all the filiforms, except the one in the stricture, are withdrawn from the urethra and then a small tunnelled catheter is slipped over this until the stricture is reached. We now no longer attempt to simply push the catheter along the filiform through the stricture, for this is a rough method, may cause bleeding and great irritation, is liable to cut and ruin the filiform, and is a frequent source of failure.

The best method is this: pass the catheter in the filiform down to the stricture, then withdrawing both catheter and filiform a little way, slide them down together, and repeat this manœuvre until the bladder is reached. We should now have at hand several sizes of Gouley, and when there is much difficulty in passing the filiform it is allowable to dilate a little more rapidly until an ordinary sound can be used than in cases which do not require the filiform, but as soon as this can be abandoned, proceed by very gradual dilatation, always bearing in mind that patience will bring its own reward.

In some few cases it is well to leave the filiform in the bladder, until an appreciable amount of dilatation is reached, to avoid the trouble of again introducing it. Failing to pass the filiform, we may try different sizes of catgut, or what is often very efficient, the slippery elm bougie which is prepared by trimming down a piece of bark to the desired size with a pen knife, polishing it nicely with emery paper, dipping in warm water and as soon as the mucilage begins to dissolve it is ready for use. I have sometimes succeeded with this when everything else failed. The mucilage which appears on its surface greatly facilitates its introduction, and once within the stricture it will absorb moisture until its size becomes double what it was when first introduced, and thus acting like a sponge tent, an amount of dilatation is obtained that no other instrument will give. We need never be afraid to use the elm bougie lest it break, for let it once become wet and its fibres will grow very tough so that it can only be broken by twisting. If we expect for any

reason, that we will have to resort to either the elm, catgut or filiform bougie, we would never use a larger instrument, because that would possible so jam together the parts as to entirely close any minute opening, and thus make it impossible to introduce any instrument, at least until urine was again passed, and this, of course, might be impossible.

If, at our first effort, we try all these instruments and succeed with none, we must not say the stricture cannot be passed, but make renewed efforts as soon as the irritation has subsided, and only give it up after repeated trials have convinced us beyond a doubt that the coarctation is at least impermeable to instruments, then as a *dernier ressort* urethrotomy remains, the length of delay, of course, being determined by the urgency of the attendant symptoms. A very large majority of all strictures may be thus treated by dilatation, but occasionally we meet with strictures of so dense and cartilaginous a nature that no dilatation is possible, or, again, we will encounter strictures so resilient, that no dilatation is in the slightest degree permanent. For the cure of these we are compelled to resort to the knife and of all instruments for internal urethrotomy.

I would prefer the urethrotome of Charriére, which is a combination of Maissoneuve's and Civiale's instruments. I prefer this instrument because it is adapted to cutting either forward or backward; but if it be possible, I prefer the *retro*grade to the antero-grade operation, because it is less dangerous, still; it is usually the case that when a stricture can be dilated sufficiently to admit an instrument that cuts from behind forwards, that stricture can be treated without cutting, and for this reason, both my father and myself have usually divided strictures from before back, always using a guide, and so far without a single accident. If we decide to do a urethrotomy we ought never to do it until the patient is well prepared for the operation. Never cut when the patient is depressed from any cause except in case of special emergency, should be a maxim in urethral surgery.

See to it, that his general condition is as good as possible, under the circumstances, and for a few days prior to the operation it is well to give a little quinine thrice daily. After the operation, it is my habit to give a full dose of morphia and command absolute rest. Should urethral fever supervene it is treated by quinine and tinct.

aconite root, while the patient is fed on milk. About 48 hours after the operation a full sized steel sound is inserted, and this is repeated at intervals of two days until the parts are thoroughly healed. It seems to me there is no field for Symes' operation, for if the stricture is sufficiently patent to admit his director, a filiform can be used with ease as a guide to internal urethrotomy, and no one will question that this is not much safer than opening the urethra from the perinæum. If nothing can be made to enter, however, we have as a last resort external urethrotomy, but my paper is already too long to permit any further details. I will only say were I called upon to do this operation, I should use the button-hole operation as practiced by Mastin, in which the urethra is entered by cutting down upon the end of a sound which presses upon the stricture, and after the stricture is divided, and a catheter is inserted, the wound is closed with pins as in the operation for hair-lip.

After any operation, no matter what it is, we show our patient how to use the sound himself, and endeavor to impress upon him the absolute necessity for its periodical use.

We instruct him to pass it at first every three or four days, then once a week for, say, six months, then twice a month, and finally, once a month, at least, for years, and it is an error on the side of prudence, if it be an error at all, to enjoin its use for life, a large number of patients will tire of this, but so surely as they do, so surely will they relapse into their former condition.

REPORT IN THE SECTION ON PROGRESS OF MATERIA MEDICA AND THERAPEUTICS.

Read Before the Medical Society of North Carolina at Concord, N. C., May, 1882.

By George Gillett Thomas, M.D., Wilmington, N. C.

The opportunities for selection of articles to make up a report in the Section on Progress of Materia Medica and Therapeutics are so abundant that a choice is difficult, and I beg of you an indulgence, if in my endeavor to present the best as well as the newest facts, I have failed to chronicle anything that is not already in your possession.

BROWN-SÉQUARD ON CHLOROFORM IN ANÆSTHESIA OF THE SKIN.

Brown-Séquard claims that the application of chloroform to the skin makes well-marked changes in the organic functions of muscles and nerves. When the drug was poured upon the necks of Guinea-pigs, decided anæsthesia resulted. His experiments were repeated on dogs, cats and rabbits, and although certain differences in the action of the drug were noted in each experiment, this prime fact remained unaltered, that profound local anæsthesia was produced in every case. The stimulation of these muscles and nerves by this application showed these organs to have become unusually excitable.

The chief point which the author makes is that in the discovery of the absence of galvanic irritability in the phrenic nerve after death of the animals—in the side opposite to that to which the chloroform was applied, he has observed for the first time the loss of muscular excitability as the result of remote irritation. Neither the rectal injection of chloroform nor the inhalation of it by the lungs produce like phenomena, nor yet would these modes of administration prevent their occurrence. Brown-Séquard has classed all these phenomena in a group, which he calls the phenomena of inhibition. Practically these results seem to point out the fact, the

author thinks, that chloroformic irritation of nerve terminations in the skin and mucous membrane may produce effects similar to those following the inhalation of the drug, or of the administration of it in large quantities by the mouth.

MORTON ON STATICAL ELECTRICITY AS A THERAPEUTIC MEASURE.

Dr. W. J. Morton, (*Medical Record*, New York,) in a lengthy and interesting paper sets forth the value of statical electricity as a therapeutic measure. After a description of the machine which he uses, Holtz's combining by a contrivance of its inventor in one machine both Franklinic and Faradic electricity, he says of its value as a remedial agent, that two explanations of its beneficial action over the other forms of electricity may be offered: first, simple mechanical disturbance followed by local alteration of nutrition; secondly, reflex action from the irritation of the peripheral distribution of nerves. The first of these classes, he says, is parallel with the mechanical action of muscular exercise, and may be comparable with massage, though these are, of course, less localized and less powerful.

The spark strikes a sharp, incisive and penetrating blow, but it can hardly be called painful, and if often repeated in a given region creates by simple disturbance a great alteration in the nutrition of the parts. In this manner he accounts for the prompt and generally lasting relief to pain seated both in the deep and superficial fasciæ and due to subacute and chronic rheumatism. Of the second class an explanation is offered by the new theory of Brown-Séquard, under the name of phenomena of inhibition, which has been presented to you. For, Dr. Morton says, the statical electricity is accumulated in quantity owing to its high tension, merely on the surface of the body and the spark is the briefest kind of current. The effect is likened to the application of other external irritants, as blisters, sinapisms, cupping, the moxa, acupuncture, the subcutaneous injection of cold water, the electric percutor of Boudet, consisting of a tuning fork kept vibrating by electricity, and probably Charcot's metallo-therapy. The entire sensory peripheral distribution of the skin is controlled by the insulation of the patient, every nerve filament being affected by the tense layer of electricity collected on the surface, while the spark which draws off the

electricity is only a more powerful localized agent of irritation and stimulation. The author reports ten cases treated by statical electricity, with curative effects where other forms had failed, comprising hysterical spasm and paralysis, muscular rheumatism, severe pain in both shoulders, the deltoids and trapezii, and in right hand, the patient being unable to raise her arm, chronic rheumatic pains, sciatica, and pain in the anterior crural nerve, Bell's paralysis—paralysis from pressure and progressive loco-motor ataxy. This method deserves careful consideration, as it powerfully supplements the aid already offered us in faradism and galvanism.

FOWLER ON ARTIFICIALLY DIGESTED FOOD (PEPTONES.)

Dr. Geo. B. Fowler, before the New York Academy of Medicine, read an instructive and practical paper on the use and mode of preparation of peptone or artificially digested food, for certain classes of cases where digestion and necessary assimilation were deficient. The peptones, being the changed state of the albumens after action of the gastric and pancreatic juices on them, differ in their chemical reäctions from the original albumen from which they were formed. They are possessed of a very high degree of diffusibility, according to Fincke, twelve times more peptone passing through the septum of a dialyser than albumen in a given time. Careful and frequent experiments with small quantities convinced the author of the value of albuminose as a suitable form of food for rectal feeding. He also injected the peptones hypodermically with good effect he thinks, certainly without any evil consequences.

Convinced of the great worth of this article of digested food, previously prepared by artificial means, he has, after much care, found the following formula for its preparation to be a safe and satisfactory one :

An infusion of the fourth or digestive stomach of an ox acidulated with hydrochloric acid to two-tenths of one per cent. is made. To one pound of finely chopped lean meat, one pound of the acidulated infusion is added. This mixture is then kept at a temperature of about 98.3° F. for two or three hours, being agitated frequently meanwhile. At the end of this time a perfect solution of the meat is effected, and it is found that there is less than seven per cent. of solid residuum which consists chiefly of fibrous tissue.

The whole is now neutralized by the addition of sodium bicarbonate, with the formation of carbonic acid which is expelled, leaving chloride of sodium in the solution. This mixture is then concentrated to one-eighth of the original weight of the meat used. The peptone prepared after this method is of dark color, beefy odor and pleasant taste, containing evidently all of the nutritive constituents of lean beef. He recommends its use as a valuable food when disappointment has followed the use of the ordinary beef extracts in the market, or the beef teas of domestic make, or other previously indigested food. We find this process, in part, recommended by Jacobi, in the article on the "Artificial Feeding of Children," by Nunn, of Savannah. The former using hydrochloric acid, the latter rennet—the object in both cases being to coagulate the milk to which these articles are added and then to break up the curd into fine division, thereby partially digesting the milk and making the subsequent action of the gastric and pancreatic juices more prompt and efficient.

RELATIVE VALUE OF DISINFECTANTS.

On the relative value of the different disinfectants, Dr. Sternberg, U.S.A., has made a series of careful experiments. He has classified them according to the amount of dilution necessary to their efficiency. In the first group are those which are active in proportion of five per cent., including in it, iodine, thymol and sodium hyposulphite. The second comprises those efficient in proportion below two per cent. including carbolic and salicylic acids, zinc, chloride, and permanganate of potash. In the last group are those which fail to disinfect in proportion of two per cent., and includes eucalyptus, salt, alcohol and camphor water.

The *Revue Scientifique* (we quote from the *Lancet*), contains an abstract of experiments made to determine the relative value of various substances in preventing the development of evolution of the microbia of putrefaction, which is interesting in connection with these experiments of Sternberg. These results were arrived at by M. Julian de la Croix, and his tables of value indicate the number of grammes of water in which one gramme of the substance mentioned prevents the development of microbia. He thus makes chlorine, the hypochlorites and per (bi) chloride of mercury the most effective, while alcohol is comparatively impotent :

Articles Arresting Development of Microbia of Putrefaction.	*Minimum Dose in which Microbial Development was Arrested.*
Alcohol.	1.77
Chloroform.	1.
Soda biborate.	1.4
Eucalyptol.	1.4
Phenol.	1.0
Thymol.	2 0
Potassium permanganate.	3.5
Picric acid.	1.00
Sodium salicylate.	3.0
Benzoic acid.	5.0
Etherial oil of mustard.	1.40
Sulphurous acid.	7.2
Alum acetate.	4.78
Salicylic acid.	3.43
Mercury bichloride.	2.525
Lime hypochloride.	1.09
Sulphuric acid.	1.35
Iodine.	4.10
Bromine.	4.93
Chlorine.	4.31

SALOMON ON YERBA SANTA.

Dr. Salomon reports in the New Orleans *Med. and Surg. Jour.*, that Yerba Santa (*Erodyction Californicum*) has, in his hands, proved a valuable remedy in bronchorrhœa, in acute bronchitis, and in the cough of measles. He esteems it highly as a prophylactic against laryngismus stridulus. Dr. Salomon employs the fluid extract of the leaves, in doses of m x to ℥ i of glycerine, this being the best vehicle, sugar, syrup and water being objectionable on account of the precipitate they formed with the gummy portions of the drug. The drug acts specifically on the mucous membrane of the air passages, as an astringent. He found it valueless in chronic bronchitis.

SEXTON—CALENDULA OFFICINALIS AND BORACIC ACID IN SUPPURATING AURAL DISEASES.

Dr. Samuel Sexton, of New York, read before the Materia Medica Society of that city a well prepared paper on the use of Calendula Officinalis, (the English marigold) and boracic acid in aural

diseases. According to Cazin, from whom our author quotes quite freely concerning the history and uses of calendula, it is regarded as slightly narcotic, has been highly esteemed as a remedy for scrofula, efficient in the control of obstinate vomiting, has been useful in treatment of pyrosis accompanied by vomiting. Being a decided diuretic it was used by Cazin to relieve anasarca, following prolonged intermittent fever, in the form of an infusion of the fresh flowers of a strength of five ounces to one quart of water, and this quantity to be taken in twenty-four hours. But he claims for its greatest success its use in chronic palpebritis and scrofulous ulceration of the eyelids.

Dr. Sexton uses an alcoholic tincture from the freshly flowering plant, and says his attention was called to its use by Dr. Piffard, who had employed it for a long time in preference to carbolic acid in Listerism. In aural diseases Dr. S. uses the calendula with boracic acid in cases of suppurative inflammation. He found that pulverized boracic acid was the best vehicle to carry the calendula into the ear and retain it there. He prepares his mixture as follows: Evaporate the fresh tincture of calendula down in a water bottle at a temperature of 150° F., to pasty consistency, and add one-half of the boracic acid. Evaporate this to dryness and add the other half and triturate. Both of the ingredients are antiseptic in nature and produce healing. In the majority of cases of suppurative otitis media, the author prefers the mixture above described. He has used it with excellent effect in traumatic rupture of the drum and in myringitis accompanying perforative inflammation of the middle ear. In the ulcerative inflammation of the external auditory canal of children, especially among the poorer classes, where the discharge is from neglect, highly offensive, sanguineous and purulent, Dr. Sexton has had excellent results from its application. The powder may be introduced through a speculum into the ear, or blown in by means of a small insufflator.

GRISWOLD—ANÆSTHETICS.

Dr. Gaspar Griswold, of New York, has collected and digested the best opinions of the best authorities on the important subject of anæsthetics. Of the theories of anæsthesia he offers four as worthy of consideration: 1. That anæsthetics act by retarding oxidation

and producing partial asphyxia. 2. That they produce changes in the blood, thus causing secondary inhibition of the functions of the nerve cells. 3. That they merely bring about cerebral anæmia from which condition anæsthesia results. 4. That they have a direct action on the nerve tissue itself. The first was suggested by the similarity of symptoms in anæsthesia and asphyxia and by the fact that oxidation seemed diminished during anæsthesia ; but the mere similarity of symptoms seemed insufficient to justify the opinion, and the diminished oxidation may be, and probably is, the result and not the cause of diminished function. The second theory seems hardly tenable in the face of Cohnheim's experiments on frogs, in which he injected salt water to replace the blood in the circulation. These frogs were subjected to anæsthetics and behaved in the same way as those in a normal condition. The third theory is supported by Bernard, that the brain is in same condition as in sleep, but here too there may be a confusion of cause and effect, for the experiments with frogs prove that anæmia of the brain does not render the animal anæsthetic and that anæsthetics produce their usual influence upon the anæmic brain. The fourth theory seems to meet with most favor and the tendency is to consider anæsthetic action as purely functional. Dr. Griswold contrasts the danger of chloroform and ether, giving preference to the latter as the safer drug. Chloroform is a depressor of cardiac action and arterial tension ; ether is a stimulant to the heart. Respiratory failure, paralytic closure of the glottis, exhaustion and shock are all set down against chloroform. Arrested respiration may occur during the use of ether as well as closure of the glottis, but the former only comes on late in the administration of the anæsthetic and the closure is spasmodic generally and occurs early, the drug being its relief as well as cause. In chloroform narcosis, the rationalé seems to be compromise of function of the medulla, from deficient circulation, this being primarily dependent on the health action. The author mentions ethedine bichloride as an anæsthetic mid-way in all respects between chloroform and ether. The practical conclusions of his instructive paper are, that chloroform, ethedine and ether affect the pulmonary circulation, chloroform most, ethedine less than chloroform, and ether least of the group. Chloroform may reduce blood pressure suddenly and capriciously ; ethedine has not been

observed to do this; ether does not affect the blood pressure. The quantity of air and time required to restore the circulation in the lungs is in inverse value to the time required to stop it. The changes produced are the same in all, the drugs differing only in rapidity of action: 1. Retardation and ultimate stoppage of the circulation in the lungs, first in the capillaries and then in the arterioles ; 2. The epithelial cells and nuclei disappear; 3. The capillaries contract, the walls become less distinct and disappear and the contained corpuscles disintegrate. The danger from chloroform is silent and sudden, approaching from the cardiac side and is difficult to meet ; the danger from ether is noisy and progressive, approaching from the pulmonary side and may be efficiently met and warded off by artificial respiration. Ethedine resembles chloroform but is less dangerous. For chloroform narcosis, threatenning death, he advises lowering the head, compressing abdominal aorta, artificial respiration, amyl nitrite or ammonia by inhalation. Intravenous injections of ammonia water (with five per cent. of ammonia gas) in the quantity of one or two drachms is the most powerful and direct cardiac stimulant and is a safe measure. He decries the use of electricity to the region of the neck or heart, because it interrupts other and more certain remedies, and may do harm.

In reviewing a case of death occurring during the administration of sulphuric ether, in which an autopsy discovered a cancerous deposit in the lungs and liver, the editor of the London *Lancet*, in a leading article remarks, that while on the whole, ether seems to be the safest general anæsthetic as yet discovered, safer than all the class of anæsthetics of the chlorine group, there exists this important exception, that in any case in which there is disease of the structure of the lungs, ether is contraïndicated, and the anesthetics of the chlorine group are to be considered the safest and therefore the best.

NEW USES FOR OLD REMEDIES—COLLEY AND OTHERS.

Dr. Henry Colley (*Quarterly Abstract Materia Medica and Therapeutics, New York Medical Journal*, July, 1881) advises the use of belladonna as a stimulant to respiration, especially in the bronchitis of children. The minute tubes fill up with thin froth, the membranes seem insensible to its presence, the child has not

learned to cough, and nervous symptoms supervene, with or without convulsions. In such cases he gives one minim of the tincture every hour to an infant six months old, decreasing the quantity as soon as improvement is manifested in the lessened secretion in the tubes, increased frequence of cough, and subsidence of head symptoms. His plan is to give enough of this remedy or any other to produce the desired effect, believing the therapeutical and physiological action, though expended on the same organs and tissues are not the same.

Tacke (in the same section of the N. Y. *Med. Journal*) recommends the use of belladonna and more particularly its alkaloid in visceral hemorrhages. He says he injected subcutaneously, 1-200 gr. of atropia twice a day for two days in a patient with eczema. This patient had suffered with a menorrhagia which was profuse and irregular in occurrence. The menses became regular in time and moderate in quantity and continued so. He had used this remedy for hemorrhage from the lungs with prompt relief to his patients. He holds that for visceral hemorrhages this drug is better than ergot, because it is certain, the dose is smaller in the strength he uses it (2-5th gr. to ʒ i,) and does not cause the inflammation which so often follows the hypodermic use of ergot. Ellesfer reports in same journal, a case of obstinate constipation accompanied by feculent vomiting, distended and tender abdomen, cold extremities and weak, rapid pulse. Various laxatives and enemata had been used without relief. After five doses of 3-5ths gr. of extract of belladonna given hourly, the vomiting ceased, and after five more, the patient had a copious evacuation. He rapidly recovered without a symtom of belladonna-poisoning.

M. Anger recommends compresses wet with solution of atropia, 1 part to 1000 to be applied to cancer for relief of pain. He says it is efficient and not dangerous.

Guemar recommends a pill of 1-6th gr. of extract of belladonna for the vomiting of phthisical patients to be taken before meals.

STIGMATA OF MAIZE.

In answer to a correspondent, the editor of *New Remedies* advises that the proper time for gathering the stigmata of maize, a remedy much recommended for the treatment of cystitis, is about the

middle or latter part of August, before the corn silk becomes dry. Experiments have proven that the preparation of the maize stigmata in alcohol impairs the value of the remedy, on account of the presence of the alcohol. The editor recommends that an aqueous extract be made at as low a heat as possible, best prepared *in vacuo*. The best mode of administration is to dissolve a portion of the extract in water and mix with syrup. Corn silk yields about twenty-five per cent. of the extract.

SMITH—QUEBRACHO IN DYSPNŒA.

Dr. Andrew H. Smith, on behalf of the Committee on Restoratives, submitted a report to his Society, Therapeutical Society of New York, founded upon clinical data, on the use of Quebracho in Dyspnœa, (published in New York *Med. Jour.*, Sept. 1881). Of the thirty-two cases reported, eleven were of spasmodic asthma, with or without emphysema and bronchitis. Of these, in nine cases the dyspnœa was notably relieved. In two cases of asthma with bronchitis no relief followed. One case of emphysema and bronchitis with asthma was relieved. One with bronchitis with obesity was not relieved. One case with mitral stenosis, and one with hypertrophy and dilatation were not relieved. Two cases of cardiac disease, (form not mentioned in the report) were benefited. In one case of fatty heart there was slight relief. Two cases of dyspnœa in patients suffering with Bright's disease, in one of whom pulmonary œdema was not noted, were relieved. In one case of aortic aneurism, relief followed the use of the drug until near the close of the case. In one case of tonsilitis, in which the dyspnœa was partly nervous, relief to this symptom was obtained. In one case of cancer of the lung, two cases of pneumonia, all attended with dyspnœa one of hysterical dyspnœa, and one case of catarrhal phthisis, in second stage, were more or less relieved by the drug. In one case of catarrhal phthisis, third stage, in one of intermittent fever, accompanied by an old pleurisy, the patient being an opium eater, the dyspnœa was not relieved, and in the last case was increased.

Thus in the thirty-two cases of different diseases, in which dyspnœa formed a prominent symptom, relief was afforded in twenty-one, in a greater or less degree, no benefit followed the exhibition of the drug in ten, and there was an increase of this symptom in one.

Nausea attended the use of the remedy in some of the cases, and, perhaps, hindered the best action of the drug. The fact that dyspnœa depending upon such a variety of causes is relieved by quebracho, points, says Dr. Smith, to the respiratory centre as the probable seat of action. Apparently it blunts the sense of the want of air and relieves or mitigates the suffering from a deficient supply. But this action may not be palliative only; for exaggerated respiratory efforts are often of themselves a source of evil. Not only on account of the muscular effort expended; but from the aspiration of blood into the thoracic viscera, which results especially when the dyspnœa is caused by narrowing of the air passages rather than by solidification and compression of the lung. Dr. Picot, a German writer, has used this remedy to relieve the rapid and often painful breathing which is caused by the ascent of steep hills. He has seen the like good result follow its use in person, without evident organic disease, but liable to breathlessness in walking fast. The dose which was usually a half drachm of the fluid extract, may be repeated several times a day.

BEEF TEA AND URINE.

Among the notable articles of the year, have been those of the analyses of the ordinary extractum carnis of Liebig and of beef teas generally, showing the similarity in composition between these preparations and urine.

According to Mr. G. F. Masterman, these articles of the sick diet are shown by repeated and careful analysis to have a closely similar line of ingredients with urine, except that they contain less urea and uric acid. Beef tea as ordinarily made, does not contain more than one and a half to two and a quarter per cent. of solid matter. Those solids are chiefly, urea, creatin, creatinine, isolin and decomposed hematin, exactly the animal constituents of urine except there is but a trace of urea.

Dr. Neal commenting on the above facts, says the real value of beef tea as a nutriment is still not appreciated, especially by the laity, and some physicians are inclined to place upon it the same estimate of nourishing powers as they do upon milk. He regards it as prejudical in diarrhœa and dysentery, and to be absolutely avoided in the diarrhœa of typhoid fever. Dr. Sibron condemns beef tea

and similar foods in chronic Bright's disease, where the kidneys are already overtaxed in their enfeebled condition, and this addition of nitrogenous metabolisis cannot be unattended with danger.

HYDRANGEA IN RENAL COLIC.

Two years ago, Dr. E. B. Freeman, of Alabama, published in New York *Medical Record*, the use of hydrangea arborescens as a potent remedy in cases of renal colic. This induced Dr. Edson, of New York, to try its effects in a case, which had been under treatment for nearly four years, and so frequent had the attacks become, that the patient often had them once a week. Such was the condition of things when he came under Dr. E's care. The urine contained deposits of the urates, and sometimes blood, mucus and muco-pus. After a year's treatment with all the standard remedies and by restricted diet, there was little change in the frequency or severity of the attacks. He gave, at this juncture, drachm doses of the fluid extract of hydrangea three times a day with gratifying results. For eleven months while under this treatment, there was no return of the colic, and only reäppeared in modified form after an intermission.

It is well to remember that these remarks are very positive, and will need further proof before this drug shall take the prominent place such a valuable property would assign it; but it is well worth our while to give the drug a trial. The remedy was used forty or fifty years ago by Dr. E. Butler, then a missionary among the Cherokee Indians, and has been used since then and recommended at different times by several physicians of eminence. It is probable that it will receive a more extended trial.

PILOCARPIN IN PERTUSSIS.

According to Albrecht (New York *Med. Record*), the muriate of pilocarpin never fails to cut short the most serious stage of whooping cough if given at a sufficiently early period. It seems to relieve the period of suffocative attacks, although the duration of the disease as a whole is not shortened by it.

The author recommends the following formula :

℞. Pilocarpin muriat.,	0.	25 =	3¼	grains.	
Cognac,	5.	0 =	75	"	ʒ i¼ fl.
Syr. aurant cor·.,	25.	=	325	"	ʒ vss fl.
Aq. distill.,	70.	=	1050	"	ʒ xviss fl.

Of this mixture, a teaspoonful to tablespoonful should be administered after each paroxysm, the dose varying with the age of the patient. The drug should be discontinued as soon as the disease assumes a catarrhal character, to be resumed if the suffocative attacks recur.

FOTHERGILL'S FEVER MIXTURE.

Dr. Fothergill says that the following combination is to be *the fever mixture of the future;* hydrobromic acid dilute, ʒ i; simple syrup, ʒ ij; water to make ℥ i. This is to be given every hour according to indication. It is specially indicated in cases where there is cerebral disturbance.

SKENE'S RECIPE FOR CYSTITIS.

Dr. Skene, of New York, recommends as almost a specific in cystitis the following : Benzoic acid and biborate of soda, each, gr. x., infusion of buchu, ℥ ij. It is to be taken in this quantity thrice or four times a day. The diet should be regulated and the bowels and skin kept in active condition.

KUBOSSON—EFFECT ON FŒTAL HEART OF MEDICINE TAKEN BY MOTHER.

Using the microphone, Dr. Kubosson has observed the effect of medicine taken by the mother on the heart of the fœtus. We offer a few of his observations : Chloroform and chloral hydrate, he finds have first a stimulant and then a sedative effect on the fœtal heart, this last being evidenced by the dulness and infrequency of the heart beats and the greater quietude of the fœtus. They act within five or ten minutes, chloral more powerfully than chloroform, especially if the chloral is given by the rectum. Opium and its alkaloids cause prolonged irregularities of the heart beat of the fœtus, acting more slowly, but for a longer period than the drugs above mentioned. Opium exerts its effect in this particular instance more if given by the mouth than by rectum, differing in this it seems from chloral. Digitalis exerts a prolonged and powerful influence on the

fœtus. Dr. Kubosson believes that a dose of chloral taken by the mother is divided within fifteen minutes between her and the fœtus in proportion to their weights. The practical conclusion is that more than thirty grains of chloral hydrate will be dangerous to the child if given per rectum or repeated sooner than in half an hour. This does not agree with Playfair's experience. Dr. K. holds that one and a half grains of opium as tincture will be dangerous repeated sooner than in an hour. The views are chiefly valuable, because these three drugs are main ones that are exhibited in the pains of labor, and even if our author appear too cautious, it is well to recollect his observations and guard against disabling the child by an endeavor to quiet the labor pains for the mother.

CHEAP SUBSTITUTE FOR HUNYADI JANOS WATER.

The following is claimed as a cheap formula and efficient substitute for Hunyadi Janos bitter water. It is twice the strength of the formula which Liebig gave of the analysis of the natural water.

℞.

Magnesium sulphate,	gr.	514.92
Sodium "	"	519.54
Potassium "	"	2.76
Sodium chloride,	"	39.15
Sodium bicarbonate,	"	15.60
Water,		16 oz.

The dose is two ounces and upward. The cost of this preparation is about two cents a quart against 35 or 40 cents for the natural water, a difference worth consideration, in view of the growing use of the water.

VALERIAN IN DIABETES INSIPIDUS.

Dr. R. H. Prior, (*London Lancet*) reports the successful use of tincture of valeria and valerinate zinc in the treatment of a case of diabetes insipidus, where every other form of treatment had failed.

BICARBONATE AND SALICYLATE OF SODA FOR TONSILITIS.

Dr. Armangue reports seven cases of tonsilitis as cured in less than twenty-four hours by the use of bicarbonate of soda. The

method of treatment was introduced by Dr. Giné. He employs the remedy locally applied to the tonsils by insufflation or directly by the patient's fingers. The application should be frequently repeated during the day. Dr. Giné holds that the effect of the remedy is not to check or diminish the predisposition to angina but only to arrest their development. He declares that tonsillotomy is a useless procedure in hypertrophy of the tonsils, as it can certainly be removed by the application frequently of the soda salt. The same enthusiastic remarks have, later, been made with regard to sodium salicylate, given internally by Dr. Joseph W. Hunt, in the *London Lancet*. He bases his treatment on the long recognized close connection between rheumatism and tonsilitis in certain of its forms. The value of the salicylate is best obtained by administering it before the actual formation of pus, and when so given it will check the disease in twenty-four hours. The doses of the salicylate of soda which Dr. Hunt employed were fifteen grains every four hours for an adult and ten grains at the same intervals for a child.

NITRO GLYCERINE.

One of the most important additions recently made to practical therapeutics, says the Philadelphia *Med. News*, is *nitro glycerine*. The physiological effects of this article are eminently characteristic, but they accord with those of the nitrite of amyl, nitrite of soda, &c. When a sufficient dose is swallowed, the face flushes in a few minutes, the heart beat is full and quicker, even tumultous in action; the superficial arteries pulsate strongly ; the head aches, with a sense of constriction around the forehead. There is singing in the ears, vertigo, dimness of vision, confusion of mind, and if the dose has been sufficiently large, there may be suspension of the cerebral function or unconsciousness may result. The latter quickly disappears, if the dose has not been excessive. The effects are referrible to paresis of the vaso-motor system of the pneumogastric, followed by increased heart action and dilated arterioles. The indications for the use of this potent remedy are, hypertrophy of the heart with high arterial tension belonging to chronic Bright's disease, angina pectoris, with some arterial tension, weakened heart following myocarditis or fatty heart, accompanied by embarrassed breathing, pulmonary congestion and œdema, with or without

general dropsy. In such cases nitro glycerine seems to answer a better purpose than digitalis, their action being opposite, the latter exciting higher vascular tension and the former lessening it. Migraine, with pallor of the face and lips, indicating contracted arterioles is speedily relieved by nitro glycerine. Certain forms of neuralgia of a like character with this are benefited. So of a form of dysmenorrhœa, the conditions are eminently such as require a remedy like nitro glycerine.

The form of administration is in a centesimal solution, one minim of nitro glycerine being dissolved in 100 minims of alcohol. Beginning with a drop dose three times daily, the susceptibility of the patient must be ascertained by the daily addition of a drop, until the desired effect is produced.

PILOCARPIN IN DIPHTHERIA.

The brilliant promises of Guttman, and following him those of several prominent physicians in this country concerning the use of jaborandi, or more properly its alkaloid pilocarpin in diphtheria have not been realized, and thus another so-called specific has been set aside with many other drugs that have been put out in this role, only to bring on disappointment. Instead of its being a specific, its administration in several instances has been followed by dangerous symptoms of collapse.

CHINOLINE.

The substitute for quinia, chinoline, has not been a success. It is presented to the drug trade either as a tartrate, or as pure chinoline, the former being a crystallized powder with a tobacco-like odor, having an irritating effect on the mucous membranes. Peppermint is said to disguise its taste, or it may be given in a wafer, or in equal parts of sugar and water. The dose is thirty grains for an adult. This salt is worth at wholesale 90 cents per ounce. This can be obtained at a slight advance on these figures in combination with tannic, sulphuric, muriatic, salicylic acid and citric acid with iron. The chinoline itself is a liquid. It is said to reduce temperature and has been given in place of quinine in malarial disorders. The uncertain results and the disagreeable taste and odor detract very much from its value. It will not displace the cinchona alkaloid,

though it may serve a good purpose as a cheaper substitute in mild cases.

RESORCINE.

Of resorcine, the antiseptics introduced to supply the place of carbolic acid, but little is yet known. It is a product obtained from benzine. It is closely allied to carbolic acid chemically, though its toxic power is less, it is vastly more soluble, free from smell and non-irritating. It can be used whenever carbolic acid would be applicable.

IODOFORM.

Within the current year, the literature of iodoform, its uses, and it might be added its abuses, have grown so rapidly that your reporter cannot attempt to do more than call your attention to its wonderful properties.

Sundry means have been suggested to mask the disagreeable odor as tannin, Peruvian balsam, the essentials oil, and lastly tonka bean or its odorous principals cumarin. Its uses as an antiseptic are applicable in nearly all wounds, but it seems especially indicated in septics, gangrenous and sloughing wounds, and in ulcers that are marked with a strumous character, and with fungous growths and in the undermined edges and offensive discharges. It has been used satisfactorily in lupus, and in wounds of the mouth and rectum. Of its use in treatment of chanchroids, there is nothing left to be said. It is used to medicate cotton and lint, and marks a useful addition to this list of antiseptic dressings. Death has apparently resulted from its excessive use, and two cases of mania are reported in persons who seemed unusually susceptible to its effects. It is advisable to avoid much pressure upon the iodoform dressing as it appears to make the absorption more rapid and potent in its systemic effects. In recent wounds, where healing by first intention is desirable, other antiseptic dressing appears preferable, as iodoform seems to prevent this primary union. The toxic symptoms following its use are of the narcotico-irritant type.

MISTLETOE.

I beg leave to call your attention to the excellent report of Dr. R. Lee Payne, of Lexington, in the Department of Experimental

Medicine. His report in the NORTH CAROLINA MED. JOUR., on the mistletoe is deserving of all praise, and the example he sets us in this useful branch of our work is worthy of emulation.

CHROME WATER IN SYPHILIS.

Dr. J. Edmund Güntz, (*Med. Record*) of Drisden, has made some novel announcements regarding the treatment of syphilis without mercury, which he claims to have not only been successful in curing the disease as perfectly as by the old plan, but to be able to rapidly abort it. He first brought his idea before the public twelve years ago in an article claiming bichromate of potassium as a useful drug in the treatment of syphilis.

His mode of administration is in solution with carbonic acid water, which vehicle makes the drug more tolerable by the stomach. His maximum daily quantity of bichromate is three and a half grains dissolved in 600 grammes (18¾ oz.) of water, this to be divided into five doses. This "chrome water" he claims, can be given daily for months in all forms of syphilis without detriment to the health. The following are his statistics: Within one year and a quarter, he has treated 174 cases of chancre. Of these he selected 85 for comparative study as being without complicating errors. In 14 of the 85 cases, the sores were cauterized; the remainder were treated with nothing but chrome water, and in 47 of these constitutional syphilis failed to appear. To avoid all chance of error, the author excludes 10 of the 47. Of these he states that 18 were under observation 159 days. He suggests that the drug acts by its powerful oxidizing properties. It is well enough to mark these statements; for even if his claims are too high, there seems to be some value in his statistics, and a substitute for mercury would not be unacceptable.

DIGITALIS.

Dr. H. C. Wood, of Philadelphia, (*Med. Times*) in a late discussion on digitalis, in referring to the action of the drug upon the heart muscle, an influence which physiological demonstration and clinical observation had established, rendering digitalis especially serviceable in disease of heart in which the increased work required of the organ is greater than the increase of power, with regard to

the particular valve affected says digitalis improves the nutrition of the heart by regulating its contraction and lengthening its diastolic interval, doing away with the rapid, imperfect contraction, which interfere with the blood supply of cardiac muscles. In such cases the nutrition of the heart suffers, because it is necessary to have lateral distension of the aorta in order to have filled the arteries of the muscular tissues. A little digitalis then steadies the heart, and therefore improves its condition and retards degeneration.

In chronic valve trouble, digitalis is useful and should be given in large doses. Dr. Wood condemns the use of the drug in aneurism, because the great danger is from lateral pressure and not want of forward pressure. In acute diseases with failing heart digitalis may be employed, and such a condition may occur in asthenic or the advanced stage of sthenic pneumonia. When the lung is consolidated throughout the heart is overworked and by and by fails. Here digitalis comes into play and often saves life, when, without, the patient must die. In regard to the cumulative action and the slow action of the drug, it may be sometime in showing its effects, but they are very permanent when once attained. It acts slowly and cumulatively, not only because of its special influence on the heart but because it comes slowly into contact with the heart structure as it osmoses slowly into and out of the body.

When it fails to act cumulatively upon the kidneys it is more apt to exhibit itself in this form upon the heart, the practical point being to watch the kidney, and if water is not passed freely then cumulative action on the heart is apt to occur. Digitalis is useful in syncope and collapse. and is better than alcohol in cases of surgical shock. For this condition he advises the hypodermic injection of twenty minims of the tincture, from which results may be fully expected in half an hour.

He prefers the infusion of digitalis for administration by the mouth, as it is more reliable.

Digitaline, not being an alkaloid, but only a purified extract, comprising, at least, a soluble and insoluble principle has but little to recommend it. There is danger, says our author, in digitalis, and larger doses should not be given until small ones have failed.

SALICYL COMPOUNDS IN RHEUMATISM.

The importance which salicyl compounds have assumed in the treatment of rheumatism, prompts your reporter to submit to you the following leader from the *London Lancet*, which is a resumé of the discussion in the Medical Society of London. After alluding to the remarkable case with which the papers were prepared and the well considered statistics contained in them, the editor says :

"Every one who has followed the interesting series of papers read before the Medical Society of London upon the Salicyl Treatment of Rheumatism, cannot fail to have drawn therefrom deductions of great practical value. * * * There appears to be practically a unanimity on the point that the two leading features of acute rheumatism, the fever and the articular affections, are more or less speedily affected by the salicyl compounds whether these be given in large or small doses.

" The valuable analyses compiled by Dr. I. Owen showed but slight difference to obtain in this respect with different doses and practically no difference in the total duration of illness. The question of dose is, it seems to us, one of considerable importance, for it was here that most divergence was exhibited between the writers. It would be well for subsequent analyses to be directed to the point, in order to test the necessity urged by Dr. Maclagan and supported by Dr. Broadbent, of giving small doses at short intervals at the commencement of treatment in order to get the patient rapidly under the influence of the drug. So far as may be gathered from these papers, it does not matter much whether one adopts this plan or one of a less vigorous kind, and it may be, indeed, that where the remedy is pushed, it may require to be withheld too soon on account of the production of its toxic effects. Dr. Maclagan, however, acts on the principle that the more rapidly the system is saturated, the more likely will the remedy be to arrest a tendency to cardiac inflammation. Believing in its anti-rheumatic action, he holds therefore, that if given in time, the cardiac complication may be and are averted; and Dr. Broadbent seems to be of the same opinion. Opposed to this, we have the analysis made by Dr. Gilbart Smith which showed that the percentage of cases with cardiac disease was even higher than in cases treated by other remedies. Dr. Fagges' remarks on this point afforded some explanation of this,

for he not only referred to the fact that in a large proportion of the cases the cardiac inflammation is present on admission but stated what is perfectly true, that murmurs are not necessarily indicative of organic valvular disease. Something must be put down to the anæmia of rheumatism, and if, as some believe, salicylate of soda increases that anæmia, we must have an explanation of cardiac murmurs during its administration without detracting from the anti-rheumatic properties of the drug.

"The comparison made by Drs. Fagge, Hood and Owen of the statistics of rheumatic fever, treated by this and other methods, all went to show that the treatment by salicyl was far superior to other methods. The remarkably rapid relief from the severe pain, so characteristic of this malady, could not, however, be given in such tables; but when we recall how frequent and necessary it was to give opiates, (it was almost a routine practice), and contrast that with the present system, we must admit that the superiority of the salicyl treatment over other plans is more than can be measured. Dr. Douglass Powell relates two striking examples of disease, which go far to support the belief that salicin is all that Dr. Maclagan claims for it. The cases of 'rheumatic' phthisis and 'rheumatic' meningitis cured by this remedy were among the most valuable contributions to the subject.

"Much of necessity was said about 'relapses,' and if we can judge between the various speakers we should say that some applied that term far more rigidly than others. In testing the efficacy of a drug, the definition of a relapse should be, in our opinion, as strict as possible. Of course, varieties of such relapse will occur, from a mild recurrence of pain, with or without pyrexia, to a definite multi-articular relapse with free sweating, high fever, and every indication of a renewed attack. Some, we fancy, have limited relapses to this latter well-marked variety, others have included far milder manifestations under that term. Do the salicylic compounds prevent relapses? or, do they increase the tendency to them? It was clearly shown by many, and particularly by Dr. Coupland, who appears to have adopted a very rigid definition of relapse, that they may occur while the patient is taking the drug, although they mostly take place when its influence is withdrawn, and surely this proves that in some way or other the drugs do neutralize the rheu-

matic poison. There may be too reasons, at least, for the seeming frequency of relapse in cases treated by salicyl. One is, that the morbid process is not actually cut short, the disease is not cured straight off by saturating the patient with salicin. It is, however, neutralized, and if the drug be omitted a so-called relapse occurs, because the neutralizing influence is withdrawn. The other—less hypothetical and well recognized cause is that owing to the apparent curtailment of the disease, the freedom from pain and fever, there is a withholding of the ordinary precautions in the matters of diet, clothing, and rest, which do so much for the favorable course of rheumatism. Unless practitioners bear this in mind they will constantly be disappointed, and by either leaving off the drug too soon, and prescribing solid food and exercise too early, will invite relapses and throw discredit on the remedy. We believe also that occasionally the premature withdrawal of the drug, owing to it having been administered in toxic doses accounts for some relapses. Individuals vary very much in respect to toleration of the drug; we know of healthy subjects who have taken with impunity, doses literally enormous; and if (as Dr. Powell pointed out) it happens not to be readily eliminated, the toxic effects are far more likely to show themselves. As a matter of common sense, we should have thought it far more rational to ascertain how little of the drug may be given which may produce the remedial effects, and not how much can be tolerated.

"We must, however, allude to the remarkable fact that in this large body of cases, comparatively few were mentioned as having exhibited alarming or dangerous symptoms due to the remedy. There are a few given of delirium and prostration, but no examples of the very grave, even fatal depression, as in some which have been previously recorded. For all that, it is pleasanter to give a remedy which shall be tolerated; and nothing came out in the facts related to show that the appearance of toxic symptoms was at all necessary to the remedial effects. Dr. Fowler's statement of the immunity from toxic symptoms enjoyed by those who take the acid made from the oil of winter green, and not the artificial acid points to the ill effects being due to the impurities in the preparation of the latter; and if that be so, it is likely that the diminution in 'salicylism' of a severe type is owing to the article supplied by the

manufacturer being of a purer quality than formerly. Dr. Maclagan stood almost alone in his preference of salicin over salicylic acid, but we cannot help thinking he has exaggerated the evil qualities of the latter. Certainly, it is a fact, that in hospital practice the salicylates, have to a great extent, displaced the more expensive salicin ; not to be sure in the mere score of economy, but because physicians generally have not found the salt to be less efficacious or more noxious than the alkaloid, whether they accept Senator's views of the changes undergone by the latter in the economy or not. Indeed, some rightly attribute some virtue to the soda with which the acid is combined, and at St. George's hospital, Dr. Owen stated the salt is combined with an excess of the alkali with most excellent results."

In conclusion, your reporter begs leave to say that he has not sought out the many new remedies that are being so rapidly offered, only to be as quickly laid aside, but it has been his aim to offer in part, at least, a small portion of the work done in the study of drugs, and their effects upon a rational basis, whether they be new or old. For the growth of rational therapeutics, founded upon the growing knowledge of physiology is the surest sign of substantial progress towards completing the proper application of remedies in the treatment of disease. Year by year this experimental medicine is growing in stature, and gaining the confidence of physicians, and out of the exactitude, if I may so call it, comes naturally the more accurate proportionment of doses, and the two demand that there shall be a supply of reliable drugs, stable in character, and as far as may be, elegant in preparation.

Experimental medicine is the soul and life of those two important societies in New York—Therapeutics and that of Materia Medica. For the considera ion of this branch alone an association is just formed in London, embracing many of the best minds in medicine in that vast city.

The number of private workers, whose names are familiar to you all, goes without saying. Headland in his concluding remarks on mercury, seems to me, to have covered the field, and I beg leave, in conclusion, to offer it to you. He says : "The more we know of its real action, of the mystic processes of its absorption, and operation on the system, and the comparative physiological ten-

dencies of the various forms in which it is administered, the better shall we be able to wield it with skill and effect. In a line of investigation and of patient experiment in disease and remedy lies our best and wisest course; and so long as we steadfastly pursue this widening path, so long, at least, we physicians can say that at the bottom of our box of Pandora there lies a Hope which is not yet flown."

REPORT OF N. J. PITTMAN, M.D., DELEGATE TO THE INTERNATIONAL MEDICAL CONGRESS HELD IN AUGUST, 1881.

Read Before the Medical Society of North Carolina at Concord, N. C., May, 1882.

Mr. President and Gentlemen of the Medical Society of North Carolina:

Since our last reunion it has been my good fortune to go (at the behest of the American Medical Association and our own State Medical organization) far beyond the seas as a delegate and representative to the great International Medical Congress (its seventh session) which convened in London on the second day of August, 1881, in St. James' great Hall; and also to the British Medical Association (its 49th annual meeting) on the 16th day of August, in the beautiful little town of Ryde in the Isle of Wight, made famous in Britanic early history by scenes of blood and daring. In this great Medical Sanhedrin of 3,182 members in the mighty and splendid capital of the modern world, matters of state and religion were not discussed as in the great "council of the Jews" (presided over by Gamaliel himself in ancient Jerusalem) consisting of 72 members only; but matters of science, biology, hygiene, sanitation and the prolongation of human life, as well as that of cattle and horses by the chosen men of science of the five grand divisions of the

earth, representing thirteen nationalities. The meeting was graced by the presence of His Royal Highness, the Prince of Wales,— "England's future king," and that of His Imperial Highness, the Crown Prince of Germany. The speech of welcome was made by Sir William Jenner, one of Britain's medical ornaments of the purest lustre; a finished scholar and an orator of wide fame. Mr. William MacCormac (now Sir William) of London, the Secretary-General next drew attention to the fact that with the exception of the honorary Vice-Presidents, all the officers elected for the Congress were his own countrymen, inasmuch as it was eminently desirable that those engaged in the work of organization, should be readily and constantly accessible. Among the above-named gentlemen, were several distinguished Americans, who, throughout the whole session of the Congress, reflected credit on the great nation which they in part represented. The fact of more than 125,000 circular notices having been sent out to various parts of the world, proves the great extent of the work done in preparation and the vast amount of information imparted and gained by that great body of men during the session, precludes any doubt as to the success which crowned their exertions. The Congress was then formally opened by the Prince of Wales, who, in a neat and appropriate address, highly applauded their efforts for the promotion and diffusion of scientific knowledge; saying, "that any addition to the knowledge of medicine must necessarily be followed by an increase in the happiness of mankind."

Then arose the bright particular star of the scientific session of this great organization of the representative men (for there were no women present) in the person of Sir James Paget, the President; the most ready speaker, and self-possessed individual that it has been my lot in life to meet; although 70 years of age, time has dealt most kindly with him; his hair is still black; he is tall, and graceful in manner and fluent in speech; his head is disproportionately small; and his countenance sad when in repose.

Before being admitted to this grand conclave, we were required to pay a guinea each; register our names, designate the organization we represented, and receive a card of membership: this was done at the College of Physicians, near Trafalgar Square. This seemed to put all on the "ad eundem" list; for instance, the dele-

gates from the American Medical Association had no more rights and privileges than those of some obscure Medical College Faculty, with two dozen students, reminding me forcibly of Burns' couplet:

" Rank is but the guinea's stamp,
A man's the gowd for a' that."

However, I saw so much to admire and commend, and so little to condemn, that I will not indulge a censorious spirit, but give place to charity, that noblest of virtues, and for which our generous profession (with few! few! exceptions) is so eminently noted, both in spirit and in deed. Passing on to some pleasing and instructive phases of my long-to-be remembered visit to this congregation of the chosen lights of scientific medicine in this great capital of the world, significantly assembled in " St. James Great Hall", a pertinent thought of the mighty English nation, and graced and blessed by their noble Prince.

The Congress resolved itself into 15 Sections, and one sub-section, making 16; each with its President, Vice-Presidents, Council, and Secretaries. These Sections had 119 meetings; 464 written, and 360 spoken communications, by eminent men of every civilized nation; and substantial good must needs have grown out of it. The great outcome of this mighty organization was more preventive medicine than therapeutics. With the acknowledged skill of the great teachers of our art, in the curative application of remedies to morbid action in the economy, we are now in the nineteenth century, with all its scientific progress, just beginning, it seems, to realize the worth of the trite old dogma of former days; that " an ounce of prevention is worth a pound of cure." But in case of our failure in carrying out the theory of preventive medicine, then with regard to therapeutics we may say with Shakspeare:

" The labor we delight in, physics pains."

Among the many interesting and instructive addresses before the Congress, was that of Prof. Huxley, on The Connection Between the Biological Sciences and Medicine. The Professor is well known as a strenuous advocate of the cell-theory; he told us in his address, in general meeting, " that the human body rather resembles an army, each cell being a soldier; an organ, a brigade; the central

nervous system, head-quarters, and field-telegraph; the alimentary and circulatory system, the commissariat: losses are made good by recruits born in camp; and the life of the individual is the campaign, conducted successfully for a few years by hygienic measures and medication, but sustains a certain defeat in the long run." I was particularly struck with the following sentence illustrative of his position: "the body itself is a sort of collection of perfectly distinct organs, not unlike a street made up of separate houses, in any one of which it is possible to have the liviest excitement and work of destruction going on without affecting the next-door neighbor." The Professor is very hopeful, though, as to the progress of the knowledge of drugs; he thinks that in the near future, the pharmacologist will enable the physician to affect in any desired sense, the function of any organ: he predicts that "the doctor" will be able to introduce into the economy a molecular mechanism, which like a cunningly contrived torpedo, shall find its way to some particular group of living elements, and cause an explosion among them, leaving the rest untouched. "In no part of medicine," said he, "has knowledge lingered more than in regard to therapeutics."

Professor Virchow, the great scientist, scholar, statesman, and author, and who holds the cell-theory of disease *par excellence*, entertained the association in general meeting for an hour or more, taking for his subject, the value of pathological experiments, being a great advocate of vivisection. He said that in order to demonstrate the normal as well as the pathological condition of parts every practitioner should study the seat of the evil itself, and not merely its symptoms. The principle of modern medicine, in a word, is that of localization. The address was listened to with marked attention by all, but I must needs say, was far from being universally endorsed. He claims to know above what is written.

The individual whose strong features and decisive action more particularly drew my attention, was Mr. J. Eric Erichsen, President of the Section of Surgery. His address was in general meeting; he is a great advocate for the animal ligature. He paid a beautiful tribute in his speech to one of our countrymen, Dr. Bigelow, the lithotritist; stating that his mode of operation had completely changed the aspect of lithotrity, and that there is every reason to

believe that it constitutes one of those real advances in a method, which marks an epoch; not only in the history of the operation itself, but in the treatment of the disease to which it is applicable. He stated that in no part of surgery has a more marked and brilliant advance been made of late years since the days of McDowell, of Danville, Kentucky, than in that which concerns the operative treatment of intra-peritoneal tumors. The establishment of ovariotomy as a recognized surgical operation has been long a matter of history; but the perfection of safety to which it has been carried, by the improvement of its details has led the way to a vast and rapid extension of operative surgery for the cure or relief of various diseases of the abdominal organs.

Among the many instructive and edifying addresses in general meeting, was that of Dr. John S. Billings, of Washington City, on the Literature of Medicine and on Cholera and Yellow Fever in the United States. Dr. Billings was the recipient of many courtesies and honors at the International Congress, and of the British Medical Association.

Drs. Flint and Barker, of New York, were both very highly considered, and justly so. I think Prof. Flint the elder, and Dr. J. M. Sims, of New York, are more widely known abroad than any American physicians or surgeons save Dr. Gross, of Philadelphia, who, a few years since, was honored with the degree of D.C.L., conferred upon him at Oxford.

Prof. Donders, of Utrecht, Holland, ex-President of the International Medical Congress, was very happy in a short little speech (in rather bad English) of 20 minutes duration; he is a man of fine physique, and pleasant address, with an air of decidedly "distingué".

Mr. Erasmus Wilson, President of the Royal College of Physicians and Surgeons, and President of the Section of "Diseases of the Skin," though 68 years of age, is an active man in body and mind, and played a prominent part in the proceedings of the Congress, and the courtesies extended to its members.

Mr. Spencer Wells, the great ovariotomist with his one thousand operations in his special line, is an affable, pleasant, gentleman, with a merry face and cheerful mien; has a world-wide reputation; and has been blessed by hundreds of women made happy by his skill and success. Myself and daughter were recipients of courtesies

and kindness, especially from this distinguished gentleman and his estimable lady.

Mr. Thomas Keith, of Edinburgh, is a handsome man, with a profusion of black whiskers; has the appearance of being reserved and cautious. His record as an ovariotomist is simply splendid, having had 80 consecutive operations, all attended with the most perfect success. With this unparalleled success, a brilliant future awaits him in this great field.

Sir Henry Thompson, the venerable and distinguished lithotomist and lithotritist of the day since Civiale ceased to be, has yielded his opposition to Dr. Bigelow's mode of operation, and now has a kind word to say of it, and is disposed to remove stone of the bladder, at one sitting, after due preparati n of the subject.

A most interesting discussion was conducted in the Pathological Section of the Congress on Friday and Saturday, on the Existence and Action of Minute Organisms in Animal Cells and Tissues. The discussion grew out of a most exhaustive contribution to the subject, by Prof. Klebs, of Prague, which paper was read by one of the Secretaries in the absence of the author. This question of the organized cause of disease, has agitated the medical world for the last twenty years; and its decision by anatomical and experimental methods (in the opinion of this earnest investigator) appears to be near at hand. Among those who participated in this interesting discussion were Profs. Lister, and Virchow, Dr. Charlton Bastian, Mr. Watson Cheyne, of London; Prof. Pasteur, of Paris; Prof. Bechamp, of Lille, and Dr. Roberts, of Manchester.

Prof. Lister, (of King's College) a little to my surprise, asked us to guard against expecting too much from his antiseptic system. He told us that he was more than ever convinced of the truth and importance of the relations of micro-organisms to diseased processes in wounds, and it was for that reason proposed to give what seemed to him a needful note of warning, against what he regarded as an exaggeration in that direction—an exaggeration which was partly due to the success of the antiseptic treatment. For where, as the result of a mode of treatment designed specially to get rid of minute organisms they get rid among other things, of inflammatory disturbance, they were naturally led to infer that all inflammation was caused by minute organisms; and that suppuration,

whether acute or chronic, was always due to similar agencies. Mr. Lister believed that to be an exaggerated view. From analogies which he instanced, he was inclined to say that inflammation was caused by an abnormal action of the nerves of the affected parts, and that its phenomena could not be explained on mere mechanical principles. As to the presence of micrococci in the suppuration, he did not think they were the essential cause of this condition, or that they existed or could exist in the healthy tissues; but only that they were, so to speak, a mere accident of the acute abscesses, and that their introduction depended upon the system being enfeebled.

Dr. Bastian with plausible argument maintained his well-known theory, that animate organisms—do not come from without, but that they are evolved from the internal tissues when they are in an unhealthy or debilitated condition, being ever present in the economy.

Prof. Pasteur protested against this dangerous theory of Dr. Bastian, that the tissues developed these organisms; he expressed himself as amazed at hearing such doctrines in these days of progress and enlightenment.

Prof. Huxley, to whom I have previously alluded, said in his address, before the general meeting, that in nature nothing is at rest, nothing amorphous; the simplest particle of that which *men in their blindness* call, or are pleased to call "brute matter", is a vast aggregate of molecular mechanism, performing complicated movements with immense rapidity, and sensitively adjusting themselves to every change in the surrounding world. Living matter differs from other matter, only in degree, and not in kind. And thus you see we have a busy world according to these learned scientists, both in the animate and inanimate particles (I do not say organisms) of nature. The wonderful progress that has been made in scientific medicine since the days of Descartes, 1628–37, and of his distinguished cotemporary Harvey and Jenner who was one of the foremost in shedding light on the great theory of preventive medicine, 1749, and of that great genius and scientist of our own day, Prof. Pasteur, of France; all this I say, should certainly encourage us, who have devoted our lives to that noblest of all professions; the alleviation of human

suffering, the promotion of health, the prolongation of life, and a proper appreciation of the same. Shakspeare says:

> "The sense of death is most in apprehension;
> And the poor beetle that we tread upon,
> In corporal sufferance finds a pang as great,
> As when a giant dies."

One of our most distinguished sanitarians and surgeons (Dr. Gross, of Philadelphia) has recently said, that the great question of the day is preventive medicine, the hygiene of our persons, our dwellings, our streets, in a word, our surroundings, whatsoever and wheresoever they may be, and the establishment of efficient town, county, and state boards of health through whose agency we shall be the better able to prevent the origin and fatal effects of what are known as zymotic diseases, which cause such destruction of human life and happiness." So by rational modes of self-management and generally wise care for body and mind, bad health both mental and physical, may be avoided.

On Friday evening, the 5th of August, the Lord Mayor and the corporation of London gave a grand reception to the Congress and to many ladies, at the Guild hall, which was illuminated by the electric light—a most brilliant affair indeed, giving us an opportunity of seeing English life in a social aspect. There being no general meeting of the Congress on Saturday, the 6th, we had an opportunity of visiting many places of special interest and attraction in and near London; the British Museum, Buckingham Palace, the magnificent parks, the Houses of Parliament, Windsor Castle, London Bridge, most famous in history, and many other places that time and space will not permit me to mention.

Epping Forest, once the resort of Robin Hood is a delightful and beautiful place; and the London people are lucky in having such "a delicious spot" within bowshot of their gates.

On Sunday, the 7th, we attended full choral service at Westminster Alley in the forenoon, and in St. Paul's Cathedral in the afternoon; hearing the Rev. Canon Barry, D.D., preach in the former, and Rev. Canon Liddon, D.D., in the latter. The members of the Congress were specially assigned a most eligible position in a body.

On Monday, the 8th, the matters of special interest were the addresses of Prof. Volkmann, of Halle, on Modern Surgery, and

that of M. Pasteur, of Paris, on Vaccination in Relation to Chicken Cholera and Splenic Fever; the latter is now one of the great absorbing subjects with scientists in the direction of preventive medicine. Prof. Volkmann looks like an earnest an indefatigable worker, as he is; has a great reputation as a surgeon, and acquitted himself before the Congress with all due honor. M. Pasteur is a pleasant looking gentleman, seemingly about 65 years of age; he is of medium height, with a fine head, wears no beard; speaks fluently, making a good and lasting impression on his hearers, and ranks with Descartes and Jenner, as a benefactor of his race.

Next, came the closing speech of the President, Sir James Paget, delivered in his happiest style, bidding "good bye, good bye, that is, all good be with you in the future; and best of all, the good which comes of doing good." A medal, a beautiful work of art, was struck commemorative of the Congress; it bears the head of Her Majesty, the Queen and Empress, by her special grace and favor. This will ever be a pleasant souvenir to the members of the Congress of "81."

The same evening many members, with their friends, took part in an informal dinner given in the concert room of the Crystal Palace at Sydenham, several leagues from London and here amid "a feast of reason and a flow of soul," terminated this long to be remembered and instructive visit of your delegate to the International Medical Congress of 1881.

The next morning, Wednesday, the 9th, we went by sail to Portsmouth, and thence across the boisterous Solent and Spithead to Ryde, where the British Medical Association was already in session; and to which I was accredited both by this body and the American Medical Association.

The meeting was presided over by Mr. Benjamin Barrow, of Ryde, F.R.C.S., and continued in session four days.

The opening remarks were made by the retiring President, Dr. Humphrey of Cambridge, his words were few, but fitly spoken, and well received.

Then followed the address of the newly elected President, Mr. Barrow, on assuming the duties of his office; it was replete with religious sentiment, and classic allusions showing the antiquity of medicine. He commented upon the sacred obligations of physi

cians, citing at length the Hippocratic oath. The address evinced much learning, and great research.

I was particularly interested and much instructed by the address of Dr. Sinclair Coghill, of Edinburgh, F.R.C.P.E.—in obstetric medicine given in general meeting. His views were highly conservative, lucidly put forth and logically sustained.

In the Section on Practical Medicine, I heard, in common, with several of my own countrymen, a paper on "Jaundice," by Lauder Brunton, M.D., of London. Quite a discussion grew out of some of the opinions set forth by this gentleman on the ætiology, pathology and treatment of this condition of the system. Dr. Brunton stated that a *very large percentage* of the cases of jaundice, were either the result of catarrh of the ductus communis choledochus, or an obstruction of this duct by gall-stones, and occasionally polypi; ætiology being mechanical. He was not at all sure whether this disease (as he called it) was hepatogenous, or hæmatogenous. The treatment relied upon was ipecacuanha, and the waters of Carlsbad, in small quantities frequently repeated; believing, as he did, that swallowing often influenced the vagus nerve, which controlled to some extent, and sometimes to a considerable degree, the action of the liver.

I was present at the annual dinner of the Association, the President, Mr. Barrow, in the chair. Here good cheer, with pertinent toasts and happy speeches, with *sparkling* wit (to say nothing of the wine) made pleasant the evening with these devotees to science, and the good of their kind.

The fourth general meeting of the Association took place on Friday, the 12th, after which its proceedings terminated.

Dr. Strange, of Worcester, the President elect, made a few pleasant remarks after his invitation to the Association to hold their session of 1883, in his "small city." He promised that there should be no lack of well-covered tables, and hospitable boards to receive the members. He then proposed the health of Mr. Ernest Hart, who is the editor of the *British Medical Journal*, the organ of this great institution. I met Mr. Hart in London, and found him a most enthusiastic and enterprising gentleman; and through the medium of his journal, has done much to elevate the status of the British Medical Association, in bringing its proceedings prominently

before the profession both on the Continent and in this country. A journal of this kind should, and most assuredly will be, established by the American Medical Association, and sustained by that institution, instead of the present annual publication.

From Ryde we went via Southampton and Havre, to Paris, the gayest capital of all the world with its great scientific institutions and far-famed seats of learning, from which have emanated so many bright moments to science, the arts, agriculture, and other material aids to the happiness and prosperity of civilized man. This magnificent city offers frightful contrasts of luxury and poverty, happiness and misery; sometimes indeed the same roof may cover the millionaire and the poverty-stricken wretch dying of hunger; usually, however, squalor, ignorance and crime prefer herding together in some quarter of the town where they may remain unmolested by the presence of affluence and splendor; and in such districts, in the narrow pestilential streets and crowded courts, children swarm like bees in a hive; (this I saw in London as well). Many of these neglected children have no homes; they feed upon the refuse they may find in the streets; they sleep in cellars, under bridges, or in any hole they may discover as night approaches. These little creatures, uncared for, and unattended prowl about the city in worse flight than the vagrant dogs, who are often their companions by night as well as by day; for no friendly hand will be put out to warn, and turn them from their evil course, until their youthful misdemeanors shall have ripened into crimes, and their fatal consequences.

In looking on such scenes, we more fully realize the great importance of efficient sanitary measures in our great cities, which must necessarily go far towards elevating the moral standard; an end greatly to be desired.

In revisiting the haunts of my earlier manhood, I was indeed saddened to witness so many changes; sed "tempora mutantur, et nos mutamur in illis," said the Romans. All of my old teachers, with two exceptions, Ricord and Bouillaud, have passed away. Roux, Velpeau, Piorry, Nélaton, Dubois, Jobert de Lamballe, Malgaigne, and many others known to fame and great distinction, have passed from time to eternity.

That royal demesne, the Palace of the Tuilleries, which stood out

in such grand relief, overlooking the Elysian Fields, has been burned and demolished by the fanatical mob of Communists. St. Cloud, that beautiful temple of kings, has been razed to the ground, regardless of the memory of St. Clovis. But the magnificent Cathedrals, Notre Dame, the Madeleine, St. Sulpice, and the great hospitals, Hotel Deiu, La Charite, St. Louis, and others, to the credit of humanity and religion, be it spoken, were spared during the reign of mobocracy, in this beautiful city, and infidel country.

I met in Paris, M. Tarnier, highly considered by obstetricians, for his double-handle forceps, which instrument he exhibited and defended before the Obstetrical Section of the International Medical Congress in London; much to the edification of those specially interested in this department of our profession. One set of handles is designed to make traction in the superior strait; the other in the inferior strait: both removable at will. So favorably impressed with the practical value of this instrument, was our esteemed friend and honorary member of this Society, Prof. Wm. T. Howard, of Baltimore, that he had a pair made in Paris, and brought them home, as they had not been used in this country at all.

Our distinguished countryman, Dr. J. Marion Sims, whose courtesies and hospitalities I enjoyed both in London and Paris (where he now lives), has a world-wide reputation, as you know, and will soon put forth a book on his specialty; upon the title of this book, he is not yet determined; it will surely be a success, having for its author so honest and profound a man, with such large experience.

My friend, Dr. Edward Warren, an honorary member of this Society, I found living in Paris, in the Rue Caumartin; he has a very extensive practice, and has many! many! decorations (17, I believe,) presented by different governments as recognitions of his skill and learning, and for his valuable services. We have cause to feel proud of our native State in producing so eminent a man. He was exceedingly clever to us; "may his shadow never grow less."

After a stay of between three and four months abroad, I returned to my native Carolina, "a wiser, a sadder (and I know a better) man," and have offered you these crude remarks on men and things that I saw, jotted down hurriedly from notes and memory at moments snatched from a busy life.

THE RIGHT ARM FORCIBLY SEVERED FROM THE BODY AT THE SHOULDER JOINT—RECOVERY.

Read Before the Medical Society of North Carolina at Concord, June, 1882.

By R. F. Lewis, M.D., Lumberton, N. C.

George Smith, white, aged 26 years, last fall superintended the ginning process at the steam mill belonging to Mr. L. C. Hamar in Robeson county ; while the machinery was in motion he attempted to make some coupling of the shafting, when his shirt sleeve was caught in some way by the cogs and his right arm was completely torn from the shoulder joint, carrying with it the entire scapula denuded of all muscular tissue.

Mr. Hamar who was in another part of the building, felt the jar given by the machinery, had the engine stopped, and hastened to the room where Smith was engaged. When he reached the door,

he encountered such a quantity of dust, that he was unable to see into the room. He called to Smith, asking him if he was injured. The reply was: "Yes, my whole arm is jerked off." Smith was found in a stooping position, his left hand resting on the floor, with every particle of his clothing, but his shoes and socks, torn from the body—the severed arm lying several feet from him. There was very little blood upon the floor, and scarcely any escaping from the lacerated shoulder. He was immediately removed to his dwelling, which was but a few yards distant, and surgical aid summoned.

Dr. John G. Dick soon arrived, and, of course, found nothing for him to do. Some one asked the doctor what disposition should be made of the arm, and his reply was, "take care of it a short while, and it can be buried with his body."

I saw him on the morning of the third day after the accident. He was very weak, with a feeble pulse of 120 beats per minute. Complained of no pain, scarcely. Was taking whiskey in small quantities, with an occasional dose of laudanum. The wound looked like it was the work of an accomplished surgeon, rather than an accident, save that there was hanging, about eight inches of the median nerve from the wound. With a pair of forceps I gently touched this, and he complained of very acute pain. I could see the pulsation of the axillary artery quite distinctly.

There was a very severe contusion over the forehead, which he received while he was fastened to the end of the shafting; when, he could not say. Says the arm was broken and twisted before he was thrown from his feet, and thinks he must have received the blow while he was being whirled around with the pulley, by striking against one of the timbers used as a part of the braces that held up the shafting. He did not recollect suffering any very acute pain when the accident occurred. It seemed rather like an indistinct dream to him.

I believed that he was then suffering from shock, and was satisfied that his hours of life were but few. Just as I was leaving, he asked me to give him my candid opinion of his condition, which I did, remarking that I was surprised at his having already lived so long.

I afterwards heard, that as soon as I left the room he expressed his belief of getting well, saying: "these doctors don't know it all." The sequel will show that Smith was right.

I heard from him every day, continually expecting to hear of his death, first from shock; the danger from this passed. I learned that he was getting stronger and that suppuration was beginning, then I feared secondary hemorrhage;but nothing of the kind occurred and his convalescence was rapid, without a single unfavorable symptom. When the wound was nearly healed, Dr. D. Sinclair removed a very small piece of the head of the clavicle. This was the only surgical attention he received and I doubt that this was required. Nature, no doubt, would have soon disposed of it, if it had been let alone.

I am now satisfied that he never had *shock*. The very severe blow he received upon the head, which was given, evidently, before his arm was severed, rendered him insensible to acute pain, and consequently in no condition to receive shock.

From the London correspondent in the Boston *Medical and Surgical Journal*, I gather, that at Guy's hospital the surgeons use torsion to the exclusion of the ligature, except sometimes in small vessels when it is difficult to isolate the vessel from muscular fibres. He has seen every kind of amputation there, except of the hip-joint, and never a ligature applied to large vessels. They seize the cut end of the vessel with strong forceps, twist it until it is felt to "give way", that is, the two inner coats break. He had seen as many as ten turns given to the femoral artery. One of the surgeons of the hospital remarked that "theoretically, the twisted end ought to slough off, but practically it never did," for a long time they had ceased to dread or look for secondary hemorrhage, where torsion had been thus applied.

To this blow, then, Smith owes his immunity from shock; and from the torsion given to the arteries, his escape from secondary hemorrhage.

ANNUAL ADDRESS BEFORE THE MEDICAL SOCIETY OF NORTH CAROLINA.

By A. W. Knox, M.D., Raleigh, N. C.

Mr. President, Ladies and Gentlemen :

No one could have experienced greater surprise than I did, when, a year ago, I was told that—in my absence from the meeting which elected me—I had been chosen by our State Medical Society as the Orator of this occasion. Painfully conscious of my own unfitness for such a task, my first impulse was, to *decline* this unsought, and surely *uncoveted,* honor. Upon reflection, however, I chose to accept the responsibility assigned me, rather than appear to *shirk a duty* imposed by the too-generous estimate of *friends,* who doubtless thought to give me *pleasure* by their kindly intentioned votes, when, in reality, I was but filled with *misgivings* and *perplexities* from the moment I began to contemplate myself in the *rôle* of a prospective *Orator.* Perhaps you will appreciate my diffidence in this respect, when I assure you that this is *the first occasion in my life* of my appearance before a public audience as a speaker.

I shall attempt, to-night, no flights of oratory—for I am *no orator*—no high-sounding, florid sentences for rhetorical effect; but shall choose, instead, a very simple and common-place topic, of mutual interest and importance both to the laity and to physicians.

My subject for this evening is, then,

VACCINATION; ITS HISTORY AND PRESENT STATUS; THE RELATION OF THE PUBLIC AND THE PROFESSION TO IT.

If I shall fail to interest you in so homely a theme, the fault will be in *myself* and not in my *subject;* for of all the beneficent discoveries which the genius of medical minds has given to the world at large, no single one has bestowed upon suffering humanity in every continent the priceless boon vouchsafed to man by *vaccination!* Yet, outside the ranks of our profession, how many there are, who are ignorant of even the name of its discoverer! Even at the present day—when it would seem almost an insult to human intelligence to attempt to *prove* that vaccination protec's against

small-pox—there exists in our own enlightened country an organization, known as "The American Anti-Vaccination League," whose purpose it is, to discredit and seek to abolish the practice of this invaluable operation. But "Truth is mighty and *will prevail*" despite all opposition; and so will vaccination be perpetuated throughout the coming ages, and all anti-vaccination-fanatics be pushed to the wall by the progress of human wisdom and the steady growth of intelligence among the masses.

The term, vaccination, is derived from the Latin word, *vacca*, which means *a cow;* and is "the process by which a peculiar specific disease,—vaccinia, or cow-pox,—is introduced into the human system, by inoculation, for the purpose of protecting it against an attack of small-pox."

For centuries past, both cattle and horses have been known to be subject to a disease which has many points of resemblance to small-pox in the human being. It is termed horse-pox or cow-pox, according as it occurs in the horse or the cow, and is essentially the same disease in both of these animals. Formerly it was thought to be identical with human small-pox; and even at the present time, medical opinion on the subject is divided. To my mind, however, the *weight of evidence* seems to be strangely *against* the theory of *identity*, and in favor of the conclusion that it is merely *analogous* to our small-pox. It is in *cow-pox*, however, that we are *particularly* interested in, because it led to the *discovery* of vaccination, and to it we look, to supply our future "stocks" of virus for the continuance of that operation. The virus from the *horse* is not generally used because the *heels* of that noble animal (on which the disease occurs) are liable to other diseases, which might be unfortunately inoculated along with the horse-pox.

The *origin* of cow-pox is not definitely known. It was thought to be derived from the horse by means of a contagium, carried on the hands of milkers, who were tending cows and horses at the same time. However this may be, it is a disease peculiar to the milch-cow, and is characterized by an eruption which appears on the udder in the form of little "vesicles," as they are called (something like a water-bleb, or small blister), which contain a semi-transparent, viscid fluid. These vesicles are frequently broken in the act of milking; and the fluid which oozes from them—called

"lymph"—produces, on the hands of the milkers, sores similar to those of the *cow;* and so the milkmen, in turn, carry the disease to other cows by means of their own sore hands.

About the year 1768, the attention of Edward Jenner was arrested by a tradition prevalent among the dairymen in the county of Gloucester, England, to the effect that milkers who had contracted these sores from the cow were ever thereafter proof against small-pox. Jenner was at this time an obscure apprentice to a surgeon at Sodbury, near Bristol. He did not believe the tradition at first; but, being a keen observer and of a reflective turn of mind, he was more and more deeply impressed—the longer he dwelt upon it—with the thought of the grand *possibilities* of its future usefulness as a life-saving measure, *if only this idea were founded on facts.*

On coming of age, he went up to London and became a pupil of the great John Hunter, in whose family he lived for two years. Returning, at length, to his native town, he settled down to the practice of his profession. Still ruminating on the subject uppermost in his mind, he set himself to search out the *reasons* for the popular belief, which had so taken hold upon his thoughts. He remembered to have heard, in the days of his apprenticeship, a young country-woman remark to his master that she "could not have the small-pox, *because she had had the cow-pox.*" The more carefully he inquired into the *grounds* of this popular notion, the more fully it took possession of him, and the stronger and deeper grew the fascination of its central idea. *Years* elapsed, however, before he put his belief to the crucial test of experiment. In one of his letters to his London preceptor and friend, he stated, that the thought had occurred to him, that it might be possible to *prevent* the small-pox in man *by inoculating him with the virus of cow-pox* Hunter's sententious reply was: "Don't think, but try!" These four simple words spurred him on to *action*, and he *did try!* The *result* of that trial has made *mankind* his debtors, and laid the whole world under obligations of reverence and respect to his memory; for, through its beneficent potency, *millions* of human lives have been preserved, which—without it—must have gone out in darkness and despair, under the blighting breath of a foul and loathsome scourge. His first vaccination was performed May 14th,

1796; and two years later, viz , in 1798, he published his great discovery of vaccination, under the title of "An Inquiry into the Causes and Effects of Variolæ Vaccinæ: a Disease Discovered in some of the Western Counties of England, particularly Gloucestershire, and Known by the Name of Cow-Pox."

Prior to this publication, he had settled, by experiment, to his own satisfaction, the following propositions in regard to cow-pox.*

"1st. That this disease, *casually* communicated to man, has the power of rendering him insusceptible of small-pox;

"2d. That the *specific cow-pox alone*, and *not other eruptions affecting the cow*, which might be confounded with it, had this protective power;

"3d. That the cow-pox might be communicated *at will* from the cow to the man by the hand of the surgeon, whenever the requisite opportunity existed; and

"4th. That the cow-pox, once engrafted on the human subject, might be continued from individual to individual by successive transmissions, conferring on each the same immunity from small-pox as was enjoyed by the one first infected direct from the cow."

Undoubtedly, at the time when Jenner published his discovery, he honestly believed himself to be the first person who had inoculated man with cow-pox, with the deliberate purpose of thereby protecting him against the small-pox. Yet, notwithstanding *the whole world* owes him a lasting debt of gratitude for this great invention, the "truth of history" *must* be vindicated by the frank admission that the records show, that Benjamin Jesty, a Gloucester farmer, inoculated his wife and two sons with cow-pox in 1774 with this very purpose distinctly avowed beforehand—*thus anticipating, by just twenty-two years, Jenner's first vaccination*. As a test of their *faith* in the efficacy of the vaccination done by their father, the two sons of Mr. Jesty—Robert and Benjamin by name—allowed themselves to be publicly inoculated with *small-pox virus* sixteen years afterwards; and neither of them contracted small-pox.

But, admitting all this, the honor of *establishing* the practice of vaccination, by fighting down all obstacles to its recognition and convincing incredulous men of their folly in resisting it, belongs

*Reynold's Syst. Med., Vol. I., p. 158. [American ed.]

none the less to Jenner, although he clearly *was not the first to inoculate with cow-pox.* The *farmer* rested content when he had conferred protection *on his own immediate family;* albeit, he faced the popular odium attaching to his act with a manly fortitude and courageous independence of spirit worthy of all praise. Jenner, on the other hand, imbued with the true professional enthusiasm, would not *let* mankind *refuse* the life-saving gift he offered them; but, conscious of the correctness of his convictions, he pressed them to their logical results with a persevering zeal, which triumphed, in the end, over all opposition.

After the publication of his discovery (for it *was* a *real* discovery—he being totally ignorant of *Jesty's* performances, at the time he did his first vaccination), Jenner went to London, to demonstrate it to the profession. But it was fully *three months,* before he could find any one willing to submit himself to the operation as a subject for the demonstration—so intense was the prejudice against it. Everywhere he encountered opposition, and even some prominent medical men made public protests against the operation. King George the Third was appealed to to prohibit the practice; and the hostile spirit ran so high, that an Anti-Vaccination Society was formed, which besought the public to uphold them in their "efforts to support the cause of humanity against cow-pox injuries." "Alleged *deaths* from vaccination were published in the mortality-bills of London. Society was warned against the danger of introducing 'beastly diseases,' which were likely to be transmitted to posterity for ages. It was asserted that the mental character would be *imbruted;* and instances were related of persons, after vaccination, 'coughing like cows' and 'bellowing like bulls.' *Theological* objections were raised, and it was argued, that 'small-pox is a visitation from God, but the cow-pox is produced by presumptuous, impious men; the former *heaven* ordained, but the latter is a daring and profane violation of our holy religion.'" In a few cases persons were actually *mobbed* because they had allowed themselves to be vaccinated.

The same prejudice and violent opposition resisted its introduction into this country, which was accomplished in 1800 by Dr. Benjamin Waterhouse, who was the first Professor of Medicine at Harvard University, and who procured the virus direct from Jenner him-

self. Dr. Austin Flint, of New York, states it as his belief, that his father, Dr. Joseph Henshaw Flint, while a student of medicine, was the first person vaccinated in America. The operation was *clandestinely* done, by Dr. Waterhouse, from prudential considerations.

It is hard for us, now, to realize that so trivial and simple an operation should have kindled such a bitter and malevolent hostility. Yet these are *facts of history*. And we need hardly wonder at this spirit of passionate resistance aroused in the *earlier* days of a startling innovation, if we but open our eyes and ears *to-day*. In the *North Amer. Review* for February of this year, appears a paper by Henry Bergh, entitled "The Lancet and the Law," which is a wild and scurrilous arraignment of Jenner and his discovery. But Bergh is essentially an enthusiast; and enthusiasts are prone to be *fanatics;* and fanatics miss the mark at which they aim nine times out of ten! He will achieve no more of success in this direction, than he has done in his anti-vivisection exploits—which is, practically, *nil*. He should confine himself to the objects of the "Society for the Prevention of Cruelty to Animals"—in the organization and conduct of which he has undoubtedly accomplished some good work. Even in this sphere, however, his enthusiasm has not infrequently led him into foolish excesses. His senseless tirade in the *North American Review* does not rise to the *dignity* of an *argument*—at least, so far as its effect upon the minds of *physicians* is concerned, *however*, it may influence the opinions and actions of some thoughtless and ignorant persons *outside the medical profession*. As a mere matter of curiosity, and to show to what extravagant lengths of untenable *assertion* fanatical prejudice will lead some minds, I quote a few of his intemperate phrases and some of his red-hot sentences:

He speaks of vaccination as "that hideous monstrosity"—"that scientific deformity on earth," and *asserts*, that "in the period of less than one hundred years that has elapsed since the introduction of this practice, *millions upon millions* of human beings have been inoculated with the most loathsome pestilence, doomed to carry to the grave bodies wasted, by consumption, or marred and deformed by scrofula, cancer and innumerable other ills." He boastfully declares the *purpose* of his article to be, to *prove* that "vaccination

never *has* afforded. and never *can* afford, immunity from small-pox; and that the unnatural practices of *so-called* scientific physicians have simply resulted in changing the ruby stream of life into a filthy current, in comparison with which the foulest *ditch-water* is pure!"

He essays to traduce the glorious record of the immortal Jenner, by the assertion the he has inflicted upon the human race one of the most grievous injuries the world has ever experienced;" and, in the same vile breath, exclaims: "Now comes one Monseur Pasteur, to do the like for the lower animals— * * * and this new phase of the inoculation and vaccination mania is exploited in the face of facts which should arouse the human race from their fatal slumber, if *anything* can do so!"

He characterizes the Compulsory Vaccination Act, passed in England in 1853, as "one of the most despotic laws ever enacted by any government"—and continues as follows: "This monstrous law, which in effect tears to tatters the Great Charter of Englishmen's liberties, has been imitated even in free America, in contravention of every citizen's inalienable right to 'life, liberty and the pursuit of happiness.'" He even appeals to *statistics*, and claims to prove, by *that* means, that vaccination is "void of even a *mitigating* effect upon the progress of small-pox," evidently unaware that—as Trousseau says*—"the statistical weapon has *two edges;* that from the same facts one may lead or be led to opposite conclusions; that a cunning statistician can *make* statistics say *whatever he wishes them to say.* If asked to *prove* this statement, I shall bring forward, as a case in point, this very attempt to make out a charge against vaccination. On the one side, the vaccinophobists have used *statistics* to maintain their accusation, and on the other side, the defence has equally derived its arguments from the same source. This is explained by the former having been dominated by *a deplorable preconceived idea*, and by the latter having examined the figures in a spirit of enlightened and judicious criticism."

"Nevertheless," shouts this great apostle of the anti-vaccination idea, with dramatic pose and gesture, "nevertheless, the dreadful work goes on of wilfully implanting in the healthy bodies of human

*Clinic. Med., Am. Ed., Vol. I., p. 128.

beings the germs of disease, from which are developed consumption, scrofula, cancer, and by which the very continuance of our own race on the earth is imperilled."

These, and such like puerile utterances, he hisses forth, page by page, in the very exuberance of his own peculiar, fanatical spleen and egotism. And yet it is evident that *even he* regards his intemperate arraignment of Jenner's discovery as fruitless; for, immediately following his appeal to *statistics*, he says: "Doubtless, in the estimation of that large portion of the public who are—through their intellectual sloth—the dupes of the medical profession, *the writer's words will pass for the ravings of a lunatic*, when he affirms that the human race is gradually *rotting away by* reason of this deadly practice of vaccination." *In very truth* this forecast of what will be the *public estimate* of his words seems prophetic of his own discomfiture. Evidently appreciating the utter hopelessness of his self-imposed task, he thus spits forth his venom at *physicians:* "But will the medical faculty *admit* this and *abandon the practice of vaccination?* There is no reasonable ground for hoping that they ever will, of their own accord; for though—as one of their number admitted to the writer lately—many of them, in their own consciences, disapprove of the practice, *they dare not give expression to their honest judgment, for fear of being ostracised by their fellows and by the public.*"

Finally, he closes his virulent attack (which, if it pass into *history* at all, will doubtless be known as "Bergh's Folly") with these intemperate words: "Never before did a free and intelligent people voluntarily make so dangerous a concession to a small minority of their fellow-countrymen as when the enactment of vaccination laws was permitted. In the opinion of the writer, since that period in the world's history which is characterized as the "dark ages," no law has been sanctioned by any government pretending to be 'popular' which surpasses in atrocity the vaccination ukase."

So much for Mr. Bergh! If he really is *sincere* in holding the opinions which he expresses I *pity* him. I have presented these extracts from his paper, not for the purpose of combatting them—for I do not think them worthy of being dignified by the formal effort at refutation—but merely to illustrate the *excesses of vehement fanaticism* of which some minds are capable. *Requiescat in pace!*

Prior to the discovery of vaccination, and even long *after* its introduction, the practice of inoculation was resorted to for the purpose of so modifying the small-pox as to render that disease much milder and less dangerous to life, than it usually is when contracted in the natural way. This result was attained in the great majority of cases, and the operation was a great advance in the direction of modifying the severity of type in the person inoculated ; but in the march of progress, it inevitably gave way before the steady advance of Jenner's *greater* discovery, and for this simple reason : that, *although* the *inoculated* small-pox was *comparatively* harmless to the patient submitting to it, it was, nevertheless, *true small-pox* still, and—besides being *now and then fatal itself*—was fully capable of disseminating that dreadful disease in its severest forms. The method of performing it was exactly like that of vaccination, except that the virus of *small-pox*, was used, instead of *vaccine virus*. Strange as it may and does appear, *the name of the inventor of inoculation is unknown ;* and we are also ignorant of even *the place where it originated*. We have reliable evidence, however, that it was practiced at Constantinople as early as the year 1700 ; yet, it did not attract popular attention, *outside of Turkey*, until the celebrated letter of Lady Mary Wortley Montague (then living at Constantinople), who wrote to London as follows : "The small-pox, so generally fatal amongst *us*, is here entirely harmless by the invention of *engrafting*, which is the term they give it. There is a set of old women, who make it their business to perform the operation. Every year, *thousands* undergo it ; and the French Ambassador observes pleasantly, that 'they take the small-pox here *by way of diversion*—as they take *the waters* in other countries.' * * * I am patriot enough, to take pains to bring this careful invention into fashion in England."

"She kept her word," writes Dr. Gregory,* "and to the spirit and enterprise of this lady, the introduction of inoculation into this country is altogether due ; her own daughter was reserved to be the first example of inoculation in England. This event occurred in 1721, and its success was complete."

The statistics of the London Small-pox and Inoculation Hospital from 1746 to 1822 (a period of 76 years) showed that only *three*

*Cyclop. of Pract. Med., Vol. III, p. 748

persons out of a thousand died of *inoculation*. "The great objection to it was, however, that it spread small-pox just as the *natural* disease did. It could be set a-going anywhere by sending in a letter a bit of cotton thread dipped in small-pox lymph for the purpose of inoculation; so that, although the practice was of great advantage to *individuals*, it was very destructive to *the public at large*, and the general mortality from small-pox was thereby greatly increased."

It was made illegal in England by act of Parliament in 1840—the penalty being one month's imprisonment. It is illegal, also, in the United States. Still there may be circumstances where it would be justifiable to resort to it, rather than take the risk of small-pox contracted in the natural way, as, for instance, when small-pox suddenly develops on a ship at sea or in isolated localities, where it is impossible to get any vaccine-lymph *at all* within a reasonably short space of time.

PRESENT STATUS OF VACCINATION.

The practice of vaccination has now been on trial for *eighty-three* years. What *results* have been established in all that time, and *what is the status of vaccination at the present day?* Jenner believed that a *single* successful vaccination furnished immunity against small-pox *for the remainder of life* as completely as an attack of that disease itself; and, reasoning from *his* standpoint in time and in the light of the facts before *him*, that conclusion was, *apparently*, well founded. But the experience of almost two generations has demonstrated that the protective influence of vaccination is *not permanent*, but gradually lessens with the lapse of years. The *duration* of this protection undoubtedly varies with different individuals; and it is still impossible to fix definitely even the *average* length of the exemption period afforded by one vaccination. Perhaps the experience of the future may reach some more positive conclusion. It is a *safe* rule to repeat the operation once in *seven* years at least, and when small-pox *epidemics* threaten, *three* years should be the *maximum* interval.

But it must be admitted that the efficacy of *humanized* virus has undoubtedly diminished since Jenner's time; and it is not unreasonable to attribute this change to its repeated transmission

from man to man through long terms of years. Yet, even in those *rare* cases, where vaccination fails to prevent small-pox, it still so *modifies* the attack as to render it almost free from danger to the *life* of the patient, and to prevent, in the majority of subjects, those disfiguring marks which constitute no small part of the dread with which the disease is regarded.

Partly because of this deterioration of human lymph by its successive transmissions through many persons (the "long humanized" virus, as it is called), and, in part, because of the undoubted risk (though *small*) of communicating another specific disease by using the virus from the child, successful efforts have been made to renew the stock of vaccine virus *direct from the cow*. For the practical solution of this problem America is under obligations to Dr. Henry A. Martin, of Boston, who, with persevering patience and skill, has triumphed over all the practical difficulties which beset him in the undertaking. "On the 26th of April a case of spontaneous cow-pox occurred at Beaugency, near Orleans, in France. This virus was brought to America by Dr. Martin's agent in 1870—his stock coming from the 258th, 259th and 260th animals, in direct succession from the Beaugency heifer; and it has been perpetuated at Brookline, Massachusetts, up to the present day." His vaccine farm is now conducted by his son, Dr. Stephen C. Martin, and is widely known among physicians. The stable is designed especially for the purpose, and has every possible convenience for the work in hand. Especial attention is paid to the selection of *healthy* heifers for the propagation of lymph. Two tables are in use—one for the animals to be vaccinated, and the other for those from which the lymph is collected. The method is as follows: The heifer is strapped down to the table, lying on the side. "A portion of the abdomen near the flank is then cleanly shaved, and the lymph from another heifer is inserted by little punctures, arranged in rows an inch apart each way. Similar punctures are also made between its hams in the rear." The heifer is then replaced in the stall until its vesicles are ripe for supplying lymph to another heifer and to the human race, when it is again put upon the table, and the operator, taking a box of small ivory points prepared for the purpose, a rack for them to dry on, and a pair of forceps, seats himself beside the table. With the forceps he gently

squeezes each vesicle in turn; and, as the lymph oozes forth, carefully collects it on the ivory points. From a good-yielding animal *several hundred* points can be charged. This done, the heifer returns to its stall; and a few days later, when the "crusts" have matured, they are carefully taken off and mounted in gutta-percha for the use of those physicians who prefer them to the lymph. The heifer then retires from the medical profession and becomes a private citizen of cowdom."* The animal frequently goes to sleep during the operation—which can therefore give but little pain.

It is a well ascertained fact that the *bovine* virus is more effective than the long-humanized; but an interesting question is suggested in this connection, viz: whether or not *this animal virus also will deteriorate by repeated transmissions through successive generations of heifers*, as has been the case with the transmissions made *from man to man*. Yet, even if the *affirmative* of this question be established by experience, the *remedy* will be close at hand: careful, searching observation will probably show that *spontaneous* cow-pox exists more commonly than is now supposed; and from such cases the energy of vaccine virus can readily be renewed by periodical reversions to the original disease in the cow.

Another of the beneficent results of Jenner's discovery is to be found in the fact that, if a person recently exposed to small-pox be successfully vaccinated *within two days after such exposure*, he will *escape* that dread disease, even though, *without* this prompt vaccination, the small-pox had been inevitable. The explanation of this interesting fact is exceedingly simple; it is this: both small-pox and cow-pox have what is known as a *period of incubation, or hatching period*—that is, a season of *perfect quietude* and *freedom from symptoms*, lasting from the moment of the entrance of the disease-germ into the system to the beginning of the patient's sickness. Now, in small-pox this *incubation period* is *twelve days*, but in cow-pox only *two* days; so that, *in the race between the germs of the two diseases* (if I may use so bold a metaphor) "through the natural veins and alleys of the blood," the *vaccine*-germ *runs, as it were, more swiftly than its competitor, and reaches the goal at least three days ahead*. For example: "Suppose an unvaccinated person to inhale the germ of small-pox on a *Monday*; if he be

*Frank Leslie's Illustrated Newspaper, August 6th, 1881.

vaccinated as late as on the following *Wednesday* the vaccination will be in time to *prevent* the development of small-pox; if it be put off until *Thursday* the small-pox will appear, *but will be modified;* if the vaccination be delayed until *Friday* it will be *of no use at all,* as it will not have had time to reach the 'stage of *areola*' (which is the index of safety) before the illness of small-pox begins. *Re*-vaccination will have effect *two days later than vaccination that is performed for the first time,* because *re*-vaccinated cases reach the stage of *areola* two or three days *sooner* than in those persons vaccinated for the *first* time."* [This "stage of areola," as it is called, occurs about the *ninth day* from the date of vaccination, and is the period when a circular area of *redness* surrounds the spot where the virus was inserted. It is one of the essential and characteristic signs of a *successful* vaccination.] *Vaccination should never be performed* AFTER *the symptoms of small-pox have begun,* because it will do no good whatever at that late stage, but will surely be productive of harm *by leading the public to discredit its protective influence.* "*The vaccination, to be effective, should have reached the stage of areola before the illness from small-pox has begun.*"

If we appeal to *statistics* for confirmation of our claim in behalf of the efficacy of vaccination, "such statistics exist to an amount practically inexhaustible, and are recorded with the greatest possible care, honesty and accuracy in reports of the proper officials of every civilized government, of boards of health, and, above all, of *small-pox hospitals.* They all invariably and perfectly sustain the doctrine that a simple 'good vaccination' in the earliest infancy, even when made with virus of moderately long *humanization,* though it may and does frequently fail to prevent small-pox *after adult age,* wonderfully *modifies* the total adult *severity,* and reduces the total adult *mortality* and *disfigurement* from the disease These statistics also perfectly agree in proving that effectual re-vaccination, or even primary vaccination in adult life, protects so completely that cases of small-pox, after either, *when done with virus not too far removed from the cow,* are as rare as *second* attacks of small-pox; while *no* case of small-pox, after either primary or

*Reynolds' Syset. Med., Vol. I., p. 155.

effective *secondary* vaccination *in adult life* with *true* animal virus, has yet been reported. It is fully believed, by those by far the most competent to judge, that small-pox, after perfect primary vaccination, followed by effective re-vaccination after the tenth year, with *true* animal virus, will prove to be as rare as *third* attacks of small-pox, of which perhaps *a score* are recorded in the whole history of Medicine."*

One example of statistics will suffice: "In 1721 the population of Boston was 11,000. In the same year there were in Boston 5,759 cases of small-pox, with a mortality of 844. *Over half the population* had the disease, and *one-thirteenth of the population died!* In 1872–'73 an epidemic the most malignant and destructive in living memory occurred in the same city. Its average mortality among the entirely *un*-vaccinated was considerably over fifty per cent. The population was about 265,000. The number of cases during the thirteen months—January 1st, 1872, to February 1st, 1873—was 3,187; the deaths 1,045. A very peculiar condition of things existed, the causes of which I have not space to explain. There were, practically, no means of isolation. In *no* way had the people of Boston of 1872 any advantage against small-pox over their ancestors of 1721, *except that yielded by vaccination*, and even that most tardily afforded; but *how immense that advantage! Without* vaccination the epidemic of 1872–'73 in Boston would have been terrible in its destructiveness. Let it be remembered that the disease, in its most malignant and contagious form, was present in every part of the city; and that small-pox is a disease to which, with hardly an exception, *every un*protected person is liable, on exposure, to its contagion. Were it not for *vaccination* there would have been, in these thirteen months, at least 150,000 cases in Boston, and little less than 25,000 *deaths*, even if the epidemic had been no more contagious and fatal than that of 1721. * * * It was, however, very *much more* malignant and contagious, and the rate of mortality among the *un*-vaccinated was much more than *three times as great*. What was true of *Boston*, in 1872–'73, was true of every city and large town of Europe and America during that dread visitation."†

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*"Anti-Vaccinism," by Henry A. Martin; North American Review for April, 1882.

†Ibid.

The foregoing striking and practical account of the Boston epidemic, and the statistics presented, are taken from an article in the April number of the *North American Review*, written by Dr. Henry A. Martin, of Boston, in reply to the charges of "Anti-Vaccinism," and called forth, undoubtedly, by Bergh's attack in the February number of the same journal. I would that not only *every person in this audience*, but also *every man* and *woman in the world* might read this paper of Dr. Martin's and ponder over it. It is an eloquent defence of vaccination—a wholly unanswerable refutation of the libelous charges brought against Jenner and his great discovery. *No fair-minded person, of any intelligence, can resist the telling force of its simplicity and directness.* I cannot refrain from laying before you *a page* or two of his vigorous and incisive dissection of the emaciated *corpse* of "*Anti-Vaccinism.*" These are his words:

"How do the anti-vaccinists pretend to *answer* these thoroughly-convincing statistics? One great and leading trick is to show that, in a certain epidemic, *more of the vaccinated* than of the *un* vaccinated died, utterly ignoring the accompanying fact that perhaps *ninety-five per cent. of the population had been nominally vaccinated.* Another is to state the entire mortality of some epidemic *before* vaccination, in which it was very small, say fifteen, or even *ten* per cent., and compare it with that in the same city *since* vaccination largely increased in population during an epidemic of terrible contagiousness, malignancy and consequent fatality. Another still, to take the mortality of *all* (vaccinated and un-vaccinated) in some *terrible* epidemic like that of 1869–'74, and compare it with some exceptionally *mild* epidemic *before* 1798, when, of course, *all* were *un*-vaccinated.

"When these and many other precisely similar and quite as dishonest trumpery subterfuges are, even to their contrivers, most evidently *insufficient*, then comes the inevitable *derneir ressort*, the *ultima ratio stultorum*, to deny the truth and good faith of the statistics themselves. Every old wife's tale, every rascally charlatan's slanderous lie, every idiot's exaggeration, is repeated and accepted as "confirmation strong as Holy Writ;" but the most authentic, elaborate, consistent, scrupulously exact statistics of great armies, government bureaus, composed of the assembled

returns of a thousand sworn officials, or of great public hospitals, open to daily and hourly inspection and criticism, are declared to be "doctored" statistics—in other words, *falsehoods* and *masses* of falsehood, the work of a conspiracy of thousands of the noblest, most self-sacrificing, truthful men in existence. A conspiracy so well organized that from every hospital, every civilized government, are published statistics of precisely the same character, thoroughly corroborative of the inestimable value of vaccination. A conspiracy *for what?* To retain a little longer the loaves and fishes, the paltry income which accrues to a part of the medical profession from the practice of vaccination—an income so small, so precarious, so insignificant compared with the labor it involves, that all physicians of any eminence, who are not actuated by *a sense of duty*, notoriously avoid and refuse the practice that wins it! The men who utter these villainous, wicked absurdities are not *all* so utterly ignorant as Mr. Bergh. Some of them *know better*. They have studied the history of small-pox and vaccination, and are well aware that when the profession of medicine, almost to a man, adopted *inoculation*, the adoption involved the loss of that practice in small-pox, which was by far the most lucrative source of professional income. They know, too, that when the same profession adopted *vaccination*, its doing so meant the abandonment of a far more profitable practice. Before either inoculation or vaccination was introduced small-pox was as common among the *wealthy* and *noble*, as fatal to *royalty itself*, as it *now* is in those back slums of London, in which are the citadels and strongholds of squalor, vice, ignorance and anti-vaccinism. The greatest income ever earned by a physician before the present century was that of the famous Dr. Radcliffe, and was mainly, if not entirely, due to his reputed great skill and success in treating small-pox. Every city and large town in England then had physicians famed for their peculiar skill in treating that dreaded disease and winning fame and fortune from the reputation. If a *single* physician in the mighty metropolis of the world, with its teeming millions, were *now* to confine himself to the treatment of small-pox (that specialty which once, when that city held not *one-third* of its present vast population, enriched *scores* of his profession) he would *starve*. It would be *rare* that he would have a *paying* patient; for small-pox

is practically unknown among the most civilized, enlightened, and, of course, *best-vaccinated* classes, and—for the occasion—I will include with them the leaders of *anti-vaccination,* who are, almost to a man or woman, very *thoroughly* vaccinated. All the sophistry of anti-vaccinators, all the shallow, baseless theories evolved from the inner consciousness of visionary pretenders to science among them, are utterly and absurdly inadequate to meet the one simple fact, patent to all, and requiring no laborious research to ascertain, that *precisely as they are well vaccinated* are people *exempt from danger of small-pox,* while those who are the *best-vaccinated,* as a class, viz : doctors and nurses, may be said to enjoy perfect immunity, even during epidemics so intensely malignant and contagious as to attack *all* the *un*vaccinated, and many of the imperfectly or improperly vaccinated exposed to their contagion."

Considering, now, the practical interest which every good citizen has in the prosperity and well-being of the community in which he dwells, not only, but also of the whole country, let us, as citizens, ask ourselves what is *our duty,* and what is the *relation of the public to vaccination.* In this connection it may not be amiss to say a word or two in regard to the unreasoning and ignorant prejudice which, of late, has in many places grown up against this life-saving operation. This prejudice is not, by any means, confined to the *illiterate ;* and yet, I am persuaded that it springs—in large part, at least—from a failure of those who entertain it to properly inform themselves of the history and real merits of vaccination. Such information is within easy reach of any one who will seek it. It is clearly the duty of every man *to protect his family from death by pestilence,* no less than *to provide for their support and defend them against violence ;* and so, also, is he under the *strongest moral* obligation to his *neighbors* to take due care that he be not himself, through any personal negligence, the open door through which the scourge may enter and depopulate the community where he dwells. Nay, more—I would go further, and declare that, in my opinion, if he *do* neglect such a plain and simple *duty,* he is guilty of an act that is *little short of criminal.* Will any *reasonable* man *deny* the palpable truth of this proposition ? I trow not ! Yet there are *many* who *do* deny it by their *acts,* although they readily *admit* it, *when reduced o the formula of words.* For instance, it is no *unusual* occurrence

that many people, in the absence of legal measures to compel it, *refuse* to be vaccinated, even when an *epidemic* of small pox threatens—and, indeed, when it actually *exists*. Some decline because of the possible interruption to their business, or the loss of a few days' work; others simply because of the personal discomfort of the sore arm; others still (and they *not a few*) because of the wild and exaggerated rumors, set agoing by thoughtless people, in regard to "the dreadful arms" they have seen. As examples of this unfortunate recklessness of speech, I will mention two instances which came within my own experience during February last: I was summoned in anxious haste, one cold, bleak night, to a woman whom I had vaccinated nearly *three weeks* before—her husband declaring, vehemently, that his wife was "in a dreadful way *with her arm*, and he was *afraid he was going to lose her;* that he would not have had her vaccinated *for a thousand dollars*, if he had ever dreamed it would serve her so." On reaching the house I found that the *arm* was giving *no trouble whatever*, and, by her own confession, *had* troubled *almost none*. It was then *past* the stage of redness, and the scab was hard and dry. The *night before*, however, she had slept across the bed *in her clothes*, and *without any covering at all*. A sudden change of temperature after midnight had thoroughly chilled her through, and she then had the beginnings of a severe inflammation. And yet this legitimate consequence of her own imprudent act had been laid at the door of the *blameless vaccination!* On another occasion, the mother of a child I had vaccinated some ten days before remarked in my hearing: "It has almost killed *my* child; why, Eliza liked to have died with her arm last night." The child was at that very moment running about the room of a neighbor's house, playing with her doll, and full of frolicsome mirth. I reminded the mother of this fact, and pointed out the child's antics to her, suggesting what would be the effect of such talk upon others, who did not *know* the real condition of the child. She saw the force of the suggestion at once; and had the frankness to acknowledge her error, and express regret at such a groundless extravagance of speech. Such remarks as this, when repeated with the inevitable *coloring* which the tongue of gossip never fails to add, necessarily contribute to the spread of a panic, and thereby materially lessen the general resort to the *only sure method of escape from*

small-pox. Let those of the laity, then, who (from any motives of expediency, or personal comfort, or even dread of the operation) think to *omit* this precautionary measure, reflect soberly, *before* they decide to do so, on this proposition, viz.: that, outside of and beyond all *personal* consideration, *they owe a duty to their fellow-men,* to see to it that the deadly pestilence shall not enter the community by reason of any deterioration of duty on their part. If they have honest doubts of the efficacy of vaccination, let them remember that they have no moral *right* to *entertain* those doubts (and, assuredly, none to *act* upon them) *without an honest enquiry into the facts; because* the *action* which such doubts suggest entails upon their neighbors the positive risk of *death!* I come now to the

RELATION OF THE PROFESSION TO VACCINATION.

Truly and emphatically, the *true* physician occupies a peculiarly responsible position in relation to this important means of protecting the *public health.* He stands like a "sentinel upon the watch-tower," ever on the alert to discover the first *cloud* of a threatened pestilence, when as yet it is "no bigger than a man's hand," and ready, at a moment's notice, to take his own life in his hand, at duty's call, and unflinchingly stand between the raging, deadly storm and *that public,* which too often, alas! denies him a generous-hearted recognition of his unselfish services—nay, even impugns his honorable motives now and then. At such seasons and under such trying circumstances his only *real compensation* is generally found in the comfortable consciousness of *a duty performed,* even though the *performance* of it involve great personal *sacrifice* in many ways. The public estimate of vaccination and the general resort to it is largely influenced by the positive or negative attitude which medical men maintain towards it. It behooves us, therefore, to use all diligence in the effort to cast our influence in the right direction.

A practical question naturally arises in this connection, viz: *Shall we ever succeed in effectually stamping out small-pox?* This was one of the aims and hopes of *Jenner.* *If* we could but secure the performance of the necessary *conditions* of such an achievement, then, indeed, might we reasonably hope to find, in our day,

the full fruition of that great man's grand ambition. The essential conditions of such a result are briefly as follows:

"1st. The vaccination of every child must be made *compulsory* within a certain time after birth.

"2d. Systematic *inspections* of two kinds must be constantly and periodically made by competent persons, namely, one to ascertain as to the effectual performance of the operation, as evinced by the kind of cicatrix visible. This inspection may be most conveniently made in public and private schools. Another inspection should have for its object to find out the numbers *vaccinated* within a certain territory compared with the numbers *born* in the same place.

"3d. Every attempt at small-pox *inoculation* must be made a penal offence.

"4th. Every case of small-pox must be treated in strict seclusion, and isolated as completely as possible."*

Early in the present year small-pox was declared, by the National Board of Health, to be epidemic throughout the United States. Among other localities the disease was reported to be at Portsmouth and Suffolk, Virginia, and at Winston, in our own State. The authorities of Raleigh, like those of other towns, very properly decided to resort to preventive measures, in the way of *public vaccination*. The plan of house-to-house visitation was adopted; and each public vaccinator was required to *record* every person in his district, whether he submitted to or declined the operation. No compulsion was resorted to, however; and the only thing savoring of such a suggestion was the declaration that—*if small-pox should reach the community*, all persons who still *refused* to be vaccinated should be compelled to *leave the city*. *Such* compulsion amounted to *no* compulsion, as the sequel showed; for, in my district alone, out of 2,225 persons recorded, 882 *refused* to be vaccinated. Consulting the records of the five other public vaccinators, I find that they report 2,644 as having declined. So that—all told—there remained in Raleigh and vicinity, at the close of the public vaccination campaign, an aggregate of 3,526 *un*vaccinated persons—a fertile field, indeed, for the most destructive epidemic of small-pox

*Aitken's Science and Practice of Med., Vol. I., p. 273.

in the event of its introduction. And there was really *no small risk* of such a thing, with two trains a-day coming direct from the infected regions into the city. To me it would be no matter of surprise whatever if our capital city should yet suffer from that dread visitation in the course of the coming summer or autumn. This experience as a public vaccinator constitutes, in my opinion, a strong argument in favor of *compulsory vaccination* and of the utter futility of all reasonable hope of *real protection of the community without such compulsion!*

During the first week or ten days there was a general and anxious eagerness to be vaccinated; but when the time arrived for the first crop of sore arms, that ardor began to cool, and some few became less inclined to avail themselves of the city's gratuitous good offices. In another *week* the wildest stories of "dreadful arms" were in general circulation and devoutly believed by not a few of the too-credulous colored folk, who, in turn, so exaggerated what they had heard, that finally a sort of *panic* arose; so that the children, and sometimes even grown persons, would scamper off like mad at sight of a public vaccinator a block or more away, and even lock themselves in their houses and refuse him admission, or even to give him their *names*. These things occurred to *me*. Now and then some very amusing incidents happened on our tedious rounds to vary the monotony of the work. I will briefly relate but one that came within my personal experience: Coming home one evening after dark, with my vaccination record book under my arm, I passed two colored men standing under a gas-lamp, who were evidently discussing the *topic of the day*, as indicated by the careful and tender manner of nursing his left arm, apparent in one of them. As I crossed the street in the light of the lamp some ten yards from where they stood, one of them exclaimed, in tones peculiar to his race: "Dar he, dar he, dar go de doctor, now! Ef *he* doan leave er achin' arm whar *he* go 'long, bless God, I dunno!!" The still night air resounded with that unshackled, hearty horse-laugh, which is distinctive of the untutored African as we see him in every-day life; and my weariness was forgotten for the nonce.

In the language of a forcible German writer:* "A weapon of

*Curschmann, Zieursseue's Cyclopœdia, Vol. I., p. 416.

defence against the scourge of small-pox so powerful as vaccination should not be left to the pleasure of the *individual;* but the *State* has the right and the duty to look after its most thorough performance. As in other spheres, where, for the attainment of a result, perfect coöperation is requisite, so our experience in regard to vaccination teaches that instruction and admonition *alone* are almost powerless in the struggle against negligence, deficient sense of duty and evil disposition, which oppose this useful measure at every step. Those acquainted with the subject, therefore, have long since been of the opinion that to the attainment of the desired end *legal compulsion is absolutely necessary!* The *authority* of the State to effect this is unquestionable in the minds of those free from prejudice; for the effectiveness of the method is beyond all doubt. Indeed, ever since vaccination has been very *imperfectly* employed against the decimating plague the average length of life has undergone a very evident increase. Compulsion is, furthermore, justifiable on the ground that a *certainty* of success is *impossible,* so long as *a few individuals* are not subject to the operation, since, from the extraordinary contagiousness of small-pox, these few become conveyers and diffusers of the poison. Even if vaccination were to be considered in the light of a *sacrifice,* the State might, under certain circumstances, demand this from *the few* in the interest of *the community.* But even the selfish pretext that vaccination is *injurious* becomes in so far untenable as that the great number of formerly accepted *dangers* of vaccination have been shown to be wholly imaginary; and *the unquestionable harm, which only rarely occurs, can be certainly avoided by means of caution and experience.*"

But *who* shall strike the entering wedge that shall rive the knotty oak of prejudice, which now prevents the enactment of compulsory vaccination laws? Surely *physicians* must make the move, and stand shoulder to shoulder in mutual support of the work, if ever our grand old State shall do herself the credit of passing such laws. But our recent Legislatures have shown so slight an appreciation of the labors and the purposes of an efficient and properly supported State Board of Health, that there is little encouragement for the hope of immediately securing the coöperation of the General Assembly in behalf of such legal enactments.

So long as *political parties* exist politicians will pander to popular prejudice, *because* it controls *many voters*. Let *us*, then, seek to disarm that prejudice by the diffusion of accurate knowledge among the people with reference to the *true* measure of protection which vaccination affords against small-pox. This can be done by means of public lectures, by health-primers from the State Board of Health, and even by the force of personal influence among our individual friends and acquaintances. The steady and ceaseless dripping of *water* will wear away even *stone;* so may our *perseverance* secure such laws in time.

Dr. Austin Flint has well said that, "if they who resist the enforcement of compulsory vaccination and re-vaccination were *alone* the victims of small-pox, society could *afford* to *let them die*, 'as the fool dieth.' But the question is, *whether society shall suffer on account of their folly?* The *right* of society to protect itself in this matter is as clear as that of placing under restraint the homicidal maniac."*

"The practicability of *stamping out* small-pox was *demonstrated* a few years since in New York city. In the winter and spring of 1877 the disease prevailed largely in that city. Efficient measures for vaccination, re vaccination, the isolation of cases and disinfection were pursued under the direction of the Health Board. The result was that from June, 1877, to April, 1879, *not a single case occurred.* During this period a *few* cases escaped quarantine and were introduced into the city, but without communication of the disease to others. This result and the brilliant achievement of stamping out epidemic cholera in 1866 and 1867, show what *may* be accomplished by sanitary science in the hands of those who, in addition to scientific qualifications, possess executive ability, together with adequate means and legal authority for carrying out effectually *preventive* measures. The *public will*, by and by, come to an appreciation of how much of life and of property is to be saved by proper laws for the protection of public health. The glory of having triumphed over an invisible and deadly foe, in the form of an epidemic disease, is *less conspicuous*, but *vastly more real*, than that of the successful warrior."†

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*North American Review, June, 1881.

†Ibid.

ADDRESS DELIVERED BEFORE THE MEDICAL SOCIETY OF NORTH CAROLINA.

By Thomas F. Wood, M.D., President.

Gentlemen of the Medical Society of North Carolina:

The labors and the pleasures of our 29th Annual Session are drawing to a close. I congratulate you upon the achievements of this session, but more particularly upon the successful task you have accomplished in hewing out the highway to this difficult point in our history.

The work you have done in the cause of better medical education is known far beyond the limits of the State, and to your lasting honor be it said, that not for one single dark hour have you been under the dominion of politics. Your work is the unselfish tribute of dutiful sons to the honor and welfare of your mother State, and to the advancement of the catholic science and art of medicine.

The first scientific Society successfully organized in North Carolina* was in the beginning of the century, and was incorporated under the title of the North Carolina Medical Society; from that day medical men have largely aided in shaping the growth of scientific knowledge. To day as the century is just drawing to a close, we see the germ planted by the careful forethought of Fenner. Loomis, Claiborn, Wheaton, Webb, Pasteur, Hill, Jones and Massenburg,†, ripening into an active, living working body, whose humane influence has extended far and wide throughout the State, affording protection to the people, arousing the latent ability of individuals, eliciting the favor of public opinion, and laying broad and lasting foundations for the generation to follow. For eighty-two years, with probably only a short interval, there has been organized effort, in some degree of activity, among our medical men.

*The earliest notice of a Medical Society in North Carolina is that mentioned in the *Medical Repository*, of New York, Vol. 4, p. 202, 1800. It is possible that the Society had a previous existence for some time prior. A mention is made of it in Joseph Pignatius, a rare book, the only copy we have heard of belongs to the library of the late Governor Clark.

†These gentlemen were the officers of the North Carolina Medical Society for 1800, Prests., 2 V. Prest., four Censors, Corresponding Secretary, Recording Secretary and Treasurer in the order in which they are named above.

Most of their literary work has perished with the newspapers to which they were contributed, but the influence of that work still lives, and still urges us on to more valuable acquirements.*

We of North Carolina, in common with our brethren of the older States in measuring the accomplishments of any of our most eminent medical men of the olden time, are inclined to smile at the mixture, in their writings, of the science and art of agriculture, and the rearing of animals, with the virtues of wonderful medicinal plants, and the minimum of the science and art of medicine. But these pioneers were not only practitioners of the healing art, including chemistry, farming, and nursing, but they were tillers of the soil, and oracles of the communities in which they served, in such multifarious employment.

Dr. John Brickell was one of the earliest physicians of education whose writings have been preserved to us. He was a medical practitioner, fond of natural history, and a writer of some pretensions. His illustrated volume on the "Natural History of North Carolina," contains but little really appertaining to medicine, but this little he owes to the traveller Lawson, who had proceeded him in his journey through the Carolinas by twenty years. Pioneer days in a state are not favorable to the cultivation of the literature of medicine, and there was no exception to the rule in North Carolina. Indeed how could we expect to find surgeons before John and William Hunter, or physiologists before Bichat, or practitioners before Sydenham, or chemists before Priestly and Lovoisier, or herbalists before Bartram and Michaux.

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*Geo. *Brownrigg* wrote "an account of oil found in the ground," a product of the region in which he lived." The paper was presented to the Royal Society of London. Printed in Philadelphia Transactions 1769.

William Bird published in 1789 a "Description of Dismal Swamp of Virginia and North Carolina, with suggestions as to the advantages of draining it to improve Public Health and Agriculture."

Dr. Armond J. DeRosset, "Intermittent Fever" Thesis University of Pennsylvania, 1790. Same author: "An Account of a Pestilential Fever as it Prevailed in Wilmington."—*Med. Repository*, 1790.

Dr. Mathias E. Langer, "*An Inquiry into the Living Principle and Causes of Life*", Philadelphia, 1793. The following year: "An Account of an Irregular Remittent Fever and Diarrhœa, published in Philadelphia Medical Museum, Vol. iii, p. 115.

Dr. John Newman, of Salisbury, an Inaugural Thesis on Jaundice with Observations on the Liver and some of its Diseases," printed in 1799.

Medical men, from the earliest days of our history, held honorable positions in the government of the State, and the notable instance of the authorship of the Mecklenburg Declaration of Independence, by Dr. Ephraim Brevard, the first outspoken and manly expression of the people's will, which gave color and substance to the National Declaration several years later, is an indication that the medical men were well prepared as political leaders. It would have been better for the advancement of medical science had the political side of medical character ended with the exigencies of the War of the Revolution; if the whole generation of political doctors had disappeared from the field of action forever with the proclamation of peace.

No sooner had the toil and anxiety of the Revolutionary War subsided, than we see the medical men scattered over a sparsely settled country, with no communication except by slow travel over dreary country roads, assembled to reap the advantages of scientific association. Their earliest work betokened vigor of purpose as physicians, and a profound patriotism. Their first thought was to stimulate the production of medicinal substances by the distribution of prizes to those who successfully raised opium, rhubarb and castor oil, for the art of the druggist and pharmacist was not then so far removed from the business of a physician as it has been, so wrongfully, in these latter days. Practical economy and commonsense marked the efforts of the medical profession—a bequest, we trust, that has descended in an unbroken line of succession to the profession of to-day.

We of to-day have reason for congratulation, not as men who had attained unto the end, but as a vigorous body of pioneers, who have blazed the high-way along which we can confidently bid our successors follow. Without any other power than that quiet influence which goes out from the life-work of every cultivated physician in his intercourse with the people; without the hearty aid of those medical men who should have befriended us in the Legislature, during one generation we have seen the *Board of Medical Examiners* created and attain unto a high degree of influence; we have seen a *State Board of Health* inaugurated; we have seen a *Pharmaceutical Association* commence its career with promise of great usefulness. Such is the broad foundation this Society has

laid, a foundation worthy of the wise-master-builders who conceived it, and worthy of the most sacred protection and fostering care of the State which is yearly reaping the benefits of the work.

We live in the midst of such great events, that it is not easy to indulge in retrospection, so imperative are the demands of the present. We seek in vain for the goal, a quiet place in the busy round of our work, from which to review, and if possible estimate our progress, and gather strength and encouragement for the future.

On these occasions it is useful to attempt a statement of our condition, to reckon our whereabouts, and to attempt to indicate our future course. But this at best can only be imperfectly done, and after all is only the view of one person. We are a part of the catholic profession, whose fate is our fate whether it be glory or disaster, and it behooves us therefore to consider such matters.

BOARD OF CENSORS—1800 or 1799.

North Carolina was not only among the first to encourage literary effort, and research, and the production of medicinal plants by the offer of prizes, but the initiave was taken by her Medical Society in raising safe guards for the protection of the people from medical impostors. In the infancy of the Union, when medical schools were very few in number, and there were only primitive means of travel, the acquisition of a medical education was very difficult. But even in these early days there was a Board of Censors composed of four* doctors whose duty it was to examine candidates for membership. One old record says: "Mr. Charles Smith presented himself for membership, and having been examined by the Censors in the presence of the Society, was admitted to membership." (This was either in 1798 or 1799, fifteen years after the evacuation of the State by the British.) As far as we can trace the record of the old Society, we find the same wise provisions made in the selection of members. As the population increased, and the facilities for travel became greater, and medical men multiplied, it was found necessary to strive for the erection of a legal standard, and in the Board of Censors we recognize the germ, whose fruit was the State Board of Medical Examiners in 1859.

*In 1800 the Board of Censors was composed of four persons, in 1802 of only two. In Massachusetts in 1817-18, the Board of Censors was composed of five members.

STATE BOARD OF MEDICAL EXAMINERS.

In this State we have had such a Board organized for over twenty years. The law under which the work was done, as defective as it is, has served to elevate the character of the medical profession within our borders more than all other means combined. With commendable loyalty to the profession and to the mandates of the State, physicians have sought the license of the Board in increasingly greater numbers year by year, until a public opinion in favor of this great work has become wide-spread. A young physician no sooner settles in a community than the people begin to enquire if he has passed the Board of Medical Examiners. The people are the ones interested in the quality of the new comer, into whose hands it is probable his sick wife or children may fall.

The license of this Board is the essential pre-requisite to holding any official medical position for county or State; it is the way by which one attains to membership in this Society, and it is the insignia of brotherhood and good standing. It is this acknowledgement of the relation of this Board to the honor and dignity of the profession, rather than the trivial penalty connected with the non-compliance of its demands, which brings together such numbers seeking the license. Only one case has come to my knowledge during the past year of the infliction of the penalty.

The task before the Board of Medical Examiners in the last few years, then, has been unusually difficult. In the last four years 142 candidates have been examined, from 23 different schools. Of this number 121 have received the license of the Board, and 21 have been rejected.

Doubtless you are interested to know what standard has been demanded in these examinations, and what are the indications of more thorough education among the applicants. It has been the intention of the present Board to have an increasingly higher standard yearly, and so commencing with a standard as low as they could conscientiously set, they have demanded such requirements as they believed would be fair in the present demoralized state of medical education. Taking the standards of the Army and Navy Board as criteria, it would be safe to say that very few candidates would have attained to them, if it had been wise to have established

them. But such a position could not be for a moment entertained. Graduates naturally would have considered it a hardship, for very many of them had been taught to consider that to pass for Army and Navy medical service one must have special training.

The law requires that the examiner shall be satisfied with the qualifications of the candidate, both as to his moral character and his medical education, and the standard demanded rests very much with the convictions of the individual examiner as to his duty in the matter. This Board has striven, by earnest and concerted action, to make the examinations practical and uniform. Four out of the seven votes must be cast to grant the license (not a very difficult thing), and it is very embarrassing to the Board sometimes, when a candidate comes prepared, for instance, on Practice of Medicine, Surgery, Physiology, and Chemistry and Pharmacy, and is ignorant of Obstetrics and Diseases of Women and Children, and Materia Medica and Therapeutics. The law could be wisely amended requiring five, or even six, votes out of seven to obtain the license.

It has been very evident to the Board that there is no uniform standard maintained in the most of our Medical Colleges. The maximum and the minimum licentiates are very far apart, the main defect being observed in matters of general education. Upon the whole, the Board has not deemed it wise to go too far in advance of the average standard acknowledged by the best medical colleges, and it would have been useless. They have been forced to do an immense amount of drudgery in their examinations, performing their duty with due regard to their obligation to this Society, to the State, and to the Profession at large.

A resumé of all the remedies for our defective educational system is not needed here. They have been time and again rehearsed by studious men in our profession. Experience as an examiner for several years leads me to the following conclusions :

1st. Medical students are too often admitted to office study without preliminary examination as to their moral, physical and educational fitness.

2d. Physicians having received students into their offices fail to insist on a regular course of study and stated examinations.

3d. There is no discipline and little training worthy of the name in most of our medical colleges. There is no standard of examinations.

The experience gained by service for three years in the Board of Examiners more than ever convinces me that examinations for the degree of Doctor of Medicine should be done by bodies entirely independent of the colleges, and this belief is gaining ground all over the country.

Dr. George F. Shrady, Editor of the *New York Medical Record*, discusses the necessity of establishing Boards of Medical Examiners in the State of New York, in the following sensible language:

"Some of the leading colleges aim at a high standard, but others do not. All can advance their standard with benefit to the profession, but only a comparatively few make any pretensions to move in a direction tending to lessen the size of the classes. And yet the diploma from one college is as good as that from another, and the possessor is to be accepted and respected by a profession which is bound by a code to stand by him through thick and thin, to endorse his acts, good or bad, to throw a mantle of charity over his ignorance and protect his interests with the sacredness of obligation, which is understood to belong to medical brothers. When doctors were scarce this was tolerable. The bottom limit of necessity in this regard has, however, been reached long ago, and now the yearly frothing over of medical recruits is noticeable by the most casual observer.

"No great harm can come now to the country by lessening the supply of young doctors by creating a uniform standard of qualification and insisting upon enforcing its requirements. And this is one of the fundamental arguments in favor of compulsory State examinations, and must be so considered by every one not pecuniarily connected with a medical school. The time has passed when, for the sake of the prosperity of any medical school, the profession shall be forced to accept any and every graduate licensed by said school. On general principles the colleges should not be allowed to fix their own standards and then have the privilege of granting licenses founded on the same. At best it is the loosest possible way of doing business. Technically speaking, it guarantees no qualification besides that which belongs to a standard that is essen-

tially arbitrary and unreasonable. Consequently the profession at large are in favor of fixing a maximum degree of qualification, and of enforcing it by the compulsory examinations by State medical boards of examiners, who shall be pledged to absolute impartiality.

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"It is scarcely to be expected that any respectable medical school will care to oppose a measure so obviously for the advancement of the general interests of the profession, and for the real good of all concerned. On the contrary, it is to the interest of the regular and honest colleges over the State to give the law their hearty support, caring only for the guarantee of the appointment of perfectly impartial examiners. The leading institutions can, if they will, be equal to any emergency in which they may be placed by the requirements of any examining board whatsoever, and the best school, the one whose professors have taught the most faithfully, and whose systems have been most comprehensive and perfect, will always be on the winning side as to the number of graduates who pass. The lesser one-horse institutions, not able to hold their own, must of necessity drop out of line. This is the proper way to effect the necessary reform. Compulsory State examination is a radical measure, but it is the only one which can be consistently advocated in the best interests of the profession at large, and even of the colleges themselves."

This is one of the few States in which there is no medical college. We are fortunate. It is far wiser to wait until such an institution could be established upon a proper foundation. We can aid the cause of education substantially, by giving our support to colleges which are already showing creditable advance towards a higher standard, rather than by erecting a college without sufficient endowment. No attempt at all should be made until our University is able to employ competent professors at such salaries as would make them independent of the fees of the students. Two medical colleges have been chartered in this State. The first, located in the backwoods of Robeson county, after a career as harmful as it was possible to be—sending out yearly numbers of men with diplomas to prey upon innocent communities on the South Carolina border—came to an abrupt end by the death of its only professor. The second, located in Wilmington, was abandoned before a course

of lectures was delivered. So we may be considered fairly over the danger of adding to the list of ill-equipped medical colleges, at least for some time to come.

STATE MEDICINE.

Preventive Medicine, whether we are ready to admit it or not, is now the most important topic the American medical profession, as an organized body, has to deal with. The great epidemic disaster in the Mississippi Valley in 1878, was the powerful agency which placed State* Medicine upon the stage as an important actor. Previously it had been the earnest hope of a small band of enthusiastic men who formed the American Public Health Association, that the time would come when the topics relating to the public health would arrest the attention of thinking people and legislators; but the most sanguine of them did not realize how soon a national disaster was to work out speedily and surely a part of the great problem they had undertaken. The high tone of this Association, its creditable original work, so patriotic, so disinterested, attracted the attention of an anxious public, now wrought to the highest pitch of anxiety. The great demand of the time was for expert workers to direct the bounteous and humane impulse which had excited the heart of the nation, and to turn to account the lessons of public disaster for the public good. By common consent the country turned its eyes anxiously to this little band of sanitarians. Delegations from the South came fresh from the fields of yellow fever pestilence—delegations of heroes true and tried—statesmen, physicians, ministers, lawyers, engineers—came dutifully forward, to join hand and heart with the sanitarians of the North and West. The army was represented by its best talent. The navy was no less worthily represented. Woodworth, of the Marine Hospital Service, with his active corps of workers, bore a conspicuous and influential

*State Medicine comprehends every agency which has for its ulterior object the prevention of disease and death. This necessarily includes the improvement of healthful surroundings of all classes, the enforcement of prophylaxis, safe-guards against the consumption of deleterious articles of food, and the employment o every agency designed to prolong life. These necessarily include the protection o the people against the malpractice of unauthorized medical men, assistance to the State in detecting such crimes as come within the cognizance of medical science, the sanitary inspection of the reformatory, charitable and penal institutions under the control of public officials.

part. Such an earnest body of men had hardly been seen before in the beautiful city of Richmond. It was a proud day for any country to see her citizens coming forward to the great task of devising means for the prevention of sickness of death. Need I say that conspicuous among the leaders of this movement were the medical men ?

I will not weary you with the details of organization. It was this convention that made the National Board of Health a possibility ; it was the continued, able and sustained support of members of the American Public Health Association that finally secured from Congress a national health organization. With this nucleus, and with the nuclei in the several States, preventive medicine has commenced a career of usefulness which can only be marred or repressed by the half education of would-be leaders, or by the misguided zeal of those who rush too far in advance of public sympathy and public information.

Great reforms take shape slowly if they are to be permanent, and it is our faith in this principle that makes us adhere so tenaciously to the work of State medicine in North Carolina. It has been the dream of our honored predecessors in this Society that the day would come when the student of disease, the statistician, the politician and the enquiring stranger could get from our State Department some knowledge as to how this stream of precious life, which flows in and out this great State annually and generation after generation makes its way ; to learn the beginnings of our populations, their social condition, their mode of life, their diseases, their causes of death ; to learn if this population is decaying or regenerating ; to learn if the Anglo-Saxon blood which our ancestors bequeathed to us has been kept bright and lustrous, or if it has been dimmed by effeminate habits and self-indulgence ; to learn if the State was gaining a population equal to the great battle for intellectual and commercial ascendancy now raging all over this restless land.

It was this Society that, through its committee in 1850, met with a sneering rebuff from the Legislature, when they prayed that a beginning should be made of the record of births, deaths and marriages. It was this Society that, through its auxiliary, moved

the Legislature to enact a law for the collection of vital statistics in 1881.

I have dwelt upon this part of the history of our work somewhat at length, because all the questions lying at the foundation of State medicine have their beginning in vital statistics. It is the key to all of our knowledge of the moral and social conditions of our people. It furnishes us with the symptoms of social and political diseases, which must be known and studied attentively before we can arrive at the remedies. We are not going to progress in our work until we have secured a good working law, that will eventually lead us on to approximate precision of record. The work is dry, monotonous, tedious. It can only be done by paid officers, who are held accountable for mistakes and neglects. The interpretation of the record can only be made by trained statisticians.

It is well to look these difficulties fairly in the face. We must either surrender the chartered privileges and responsibilities of our work as sanitarians, or we must educate ourselves to educate this slow-moving community to give us competent laws and adequate means.

The time is opportune for the inauguration of State sanitary work. The people are seeking information upon hygienic topics. The wealthy and influential States are spending money and employing the skilled work of the best hygienists, in the work of organization of machinery and the dissemination of knowledge. The public press is largely engaged in directing the attention of the people to sanitary studies. Several journals in America and many abroad are devoted to the promotion of public and private sanitation, and the topic has been taken up with great earnestness and scientific devotion. There is great danger that the cause will be harmed by pseudo-scientific writers who really have only cheap health sermons to preach, reiteration of platitudes, and high morality which they notoriously do not practice.

State Medicine is a forming science, having substantial foundation in facts. It is a serious study and is no more a field for the display of flippant declamation, than the exacter science of anatomy affords. It is a field of rare promise to the younger men of the profession, and should be cultivated with assiduity by them, if they expect to keep pace with the whole science of medicine.

It is my duty to appeal to you to inquire more earnestly into the work marked out by your Board of Health. Does the work already done not amount to much? It is because you have not labored to effect this end. Does it seem to you like folly to undertake a work so momentous in its design, with such inadequate means? You could at least have the courage to heartily second your agents to whom you have entrusted this work. Does your State not need such humane effort exerted for her behalf? Then it is because the problems of the causes of sickness and death have been settled, because we have nothing to learn of the sanitary effects of foods and drinks, of ventilation and drainage, and of all the social conditions of these people.

If our sanitary and social systems are the best in the Union, then let us put it on record, that the world may read. We are not willing to assert it until we see the careful record brought together by scrupulous observers. If this record should show that we as a State are all it is desirable to be in regard to the sanitary management of this great population, how quick would you see these thousands of waste acres of ours fructify for the sustenance of another million of new-settlers.

Why abandon these grave questions to politicians who have neither the education or the training in sanitary subjects to present them with respectability if they desired to do so? and whose term of office is entirely too short to even traverse the great subject. If sixty days every two years were entirely devoted to this work, do you suppose that an average Legislature could produce a law that would be satisfactory to the officers who were to execute it? No! It is our peculiar duty, and it ought to be our glory, to go in and possess this land of promise. Our scientific studies and our sanitary training fits us for it. If need be we must not be too proud to begin with the elements of the science of State Medicine, until we can attain the irresistable force of that influence which comes with knowledge. No people are going to begin a reform until they are convinced of their wrongful ways, and the conviction must strongly be upon us before we can convince others.

It is at least gratifying to get from time to time the kind commendation of our friends who are pursuing the same work in other States. They seem to know how good our purpose is, and how great

our obstacles are. They see how sharp is the struggle for existence, and some of them help us too. It is only left for us to bring to bear the same zeal which effected the enactment of our Board of Examiners law 25 years, and who would be willing to admit that we have not at this day vastly more influence now than then?

THE PERPLEXITY OF MEDICAL LITERATURE.

We need not stop to discuss whether the student who learned anatomy from old Cheselden, or got his first glimpses of physiology from Darwin's Zöonomia, was a better anatomist or a better physiologist than those students who skim over the rich field now opened to them. As much depends upon who the student is, as what he studies. In our day the perplexity of medical literature is very great. Dr. Billings in his celebrated address before the International Medical Congress held in London last year, brought together in a masterly manner the condition of medical literature.* The difficulties which beset the earnest student of medical literature, are only increased by the increasing number of authors who themselves should be readers instead of writers. "What will the libraries and catalogues, and bibliographies of a thousand or even a hundred years hence be like if we are thus to go on in the ratio of geometric progression, which has governed the press for the last few decades? The mathematical formula which would express this, based on the data of the past century, gives an absurd and impossible conclusion, for it shows that if we go on as we have been going there is a time when our libraries will become large cities, and when it will require the services of every one in the world, not engaged in writing, to catalogue and care for the annual product. The truth is, however, that the ratio has changed, and that the rate of increase is becoming smaller."

How to use to advantage what we have is the question which Dr. Billings is laboring upon with great assiduity, and rare knowledge. The chaff is immeasurable, the grains of wheat not numerous in the greatest collection of medical works. But all must be brought together, classified and indexed for future use. The weak dilutions and repetitions and bold plagiarisms of the classic author, must rest side by side with the originals on the shelves of our great libra-

*"Our Medical Literature," *London Lancet*, American Ed., October, 1881.

ries, awaiting the master touch of the educated bibliographer, to make them working material for the student. We may well look with pride upon the massive work which Dr. Billings with his corps of able assistants is doing for medical bibliography and consequently for medical science in America. The four corners of the world have been ransacked for their gems, and, indeed, for the old rubbish in medical volumes. The private libraries of American physicians have willingly disgorged the musty tomes, those respectable old shelf-keepers, the pride of our fathers, to swell the collection at Washington until now the visitor who looks in on this mass of learning with the intention of pursuing a special subject, will in his bewilderment, turn with gratitude to the men of brains who conceived, and the scholarly assistants who executed the herculean task of indexing 110,000 volumes.

Let those who regret that they have no access to great libraries, says Dr. Billings, and must really rely on the common text-books and current literature for bibliography, console themselves with the reflection that much the larger part of all our literature which has any practical value belongs to the present century, and, indeed, will be found in the publications of the last twenty years.

Say what you will about the men of learning in our profession, depreciate the value of erudition as compared with practical knowledge and common-sense, as we may, it still remains true, that the physician who ignores book learning is not only neglecting the recorded experience of men who journeyed along in the same road, and must of necessity have caught some glimpses of the path worth recording, but they are failing to cultivate a habit full of solace and comfort in after years.

The pleasure of the scholar who delights the hours of his declining years, and lives over again the failures and successes of a busy medical career by companionship with his old familiar text-books, long after he has withdrawn from the anxieties of active work, was most beautifully exemplified in the life of the elder Dr. McRee, of Wilmington. For him there was pleasure still to be found in the neglected volumes of Sydenham and Hunter, and his last days were spent, in spite of decrepitude and bodily suffering, in the classic companionship of Pareira's Materia Medica. To our McRees, our Dicksons, our Norcoms, scholars all, we turn to their

lives for the evidence that erudition and practical wisdom and common-sense do go hand in hand.

ORIGINAL RESEARCH.

Laboratory research in biology and pathology is about to outlive the sneers and skepticism of the pure clinicists, and the demagogical assaults of the anti vivisectionists. In conservative England, the birth-place of conservative scientific medicine, the clamor of a few *antis* touched the tender hearts of the politicians with so much pity, that a law was enacted forbidding, under severe penalty, the vivisection of animals for scientific purposes. As Dr. Lionel Beale puts it: "To make experiments upon a living frog subjects the unfortunate physiologist to a fine of £25; but a man may brutally kick and beat his wife, and the beastly husband gets off with a fine of as many shillings. So that now, venerable old England, which gave to the world the key to all biological knowledge in the experiments of the venerable Harvey on the circulation of the blood; and established the fundamental principles of pathological research by the work of John Hunter, is willing that her students shall spend their energies in German laboratories, lending their vigor to the building of science in a foreign country, rather than allow as valuable an animal as a toad to be wounded in an English laboratory.

If the good sense of the American people does not save science from an assault of the *antis* here, we have hope in the engrossing discussion of the ever fresh subjects of party politics. It is true that the feeble voice of Bergh was raised against the cruelty of vaccinating heifers, but he was obliged, for lack of original argument, to resort to hackneyed words of the raging London *antis*.*

Nothing has stood in the way of original research with us so much as the lack of the proper endowment to enable the trained scholar to pursue his work without loss. Already the fostering care of wealthy and public-spirited men is beginning to be felt in encouraging original work. The generosity of the venerable scholar and bibliographer, Dr. Toner, of Washington, has endowed a lectureship in the Smithsonian Institute. Another gentleman,

*North American Review, 1882.

Mr. Cartwright, has endowed a lecture fund for the promotion of original research. But the most important impetus yet given to original medical study in America is the work undertaken by the Johns Hopkins University. Biological study is pursued there by enthusiastic and trained scholars, with ample means, so that already the record of their work is being felt in the scientific world. Other medical schools are increasing facilities for biological and pathological study, and so America, catching the inspiration from teachers who were silenced by the rigor of the anti-vivisection law in England, is fairly entering upon a career which we may reasonably expect to be fruitful. But fruitful work cannot result without the professional corps is greatly reduced, a condition which seems to be precedent. The special training of these professors should be further encouraged by a generous recognition of its necessity on the part of the whole profession. It is rarely possible for a physician, dependent upon a professional income, to pursue original studies, and lead a class on to high achievements. "With ever widening field of physiological research, it has become year by year less possible for men to serve with success it, and some other master at the same time."*

If we can judge by the impetus which has been given to Therapeutics by Horatio C. Wood, Roberts Bartholow, Isaac Ott and others, in the past ten years, we may expect to see this department of medicine, which has heretofore been cultivated almost exclusively in its clinical aspects, pushed forward with zeal and success by the conjoint efforts of clinical and laboratory study. In fact, we have examples in two, at least, of the gentlemen mentioned, of the possibility of pursuing the general practice of medicine and original laboratory research. The two things are not incompatible, nor should they be so considered by American physicians, for our eminence in the world of medical science is most likely to be won for us by achievements in practical Therapeutics. Indeed, this is the end and glory of all our scientific work. Science is the highest grade of attainable truth. It is an indestructible principle, whether it be brought to light by the dreaming philosopher or the chemist in his laboratory. We have a recent evidence of this. Dr. Burdon

*Michael Foster: Address Int. Cong. *London Lancet* October. 1881, p. 304.

Sanderson, uttering his most recent observations on the phenomena of inflammation, shows that a scientific truth wrought out of the rare brain of John Hunter a hundred years ago, is substantiated by the most toilsome methods of modern laboratory work. "Twenty years ago," he says, "we all thought that John Hunter's sagacious utterance, that a "local inflammation cannot raise the temperature of an inflamed part above the source of the circulation," was wrong. After the careful study bestowed upon the subject by Simon and Otter Weber, Hunter's theory was eclipsed. But to-day Conheim's skilled and patient researches have let us back to the substantial Hunterian fact and theory.

These provings of truth are *points d'appui*, by which we triangulate over the dreary wastes between, and wait patiently for the ripening of other truths, and so we are enabled in time to span abysses of ignorance, and doubt, and skepticism. Have more patience with the recluse who brings to you a rediscovered truth, be he laboratory drudge, or the isolated country doctor on his lonely rounds. Schwann lived years after he gave to us his theory of the histology and physiology of the cell, and Charles Darwin was called by one of the English world's favorite teachers a philosopher of dirt, but the truth formulated by these men will live long after the name of the discoverer is forgotten in the past.

OUR ETHICAL RELATIONS.

It must be considered very unfortunate and ill-advised that the New York State Medical Society should have removed the natural barrier which has always been maintained against the irregular schools of medicine. It did not need the printed rules of a national or a State Society to prevent consultations with men whose medical education in every respect is different from our own; but after this well-established practice had obtained for so many years and been formulated in a code we now venerate, it seems like a gratuitous surrender on the part of the New York Society to pay such deference to a system that its friends had well nigh abandoned.

If homœopathy or eclecticism can show us in one single instance the production of a classical work in any of the fundamental branches of medicine, we are willing to pay them that deference

due to their learning. But so long as we look out into the dreary waste and see the students of these sects obliged to learn anatomy and physiology, and pathology, and obstetrics, yea and even therapeutics, from the standards we have set up, and then make pretentious claims of reform and progress peculiar to themselves, we must decline to descend to their level. If they have any good in them we feel at liberty to use it, for it is the prerogative of scientific medicine to seize upon knowledge wherever it is to be found, but we will never be prepared to give the hand of fellowship to any sect in medicine that is willing to adopt an exclusive dogma as a seal of their special mission.

Moreover, the homeopathic physicians are not in especial need of this new concession. They are already ridiculing the weakness of our New York friends. They would rather pursue their calling under their peculiar trade-mark, *similia similibus curantur*, which in so many fashionable communities puts money in their purse, than to join hands with us. If they are honest this will certainly be their course, and the condescension made for their benefit be entirely lost upon them.

If regular scientific medicine cannot overshadow and finally eradicate error by amassing facts and teaching truth, we need not deceive ourselves by believing that a compromise will be more successful.

SPECIALISM.

There is no more laudable ambition among medical men than to aspire to the lofty position of a legitimate specialty. To possess the education, the training and the ripe knowledge; to master the principles of medicine and surgery in such a way as to have broadened the intellectual comprehension and to have attained to the tactile erudition necessary for the delicate manipulations in surgical specialties, are rare accomplishments. Specialism is a higher plane of medical practice, upon which none should enter who have not the prerequisite training in general medicine, which years of hard work brings. The young medical man who selects a specialty because he has a distaste for all the other branches of medicine, is sure to have an unsymmetrical development of learning, and perhaps of reputation. There is no such thing as mastering the

practical details of a department of surgery or medicine, and pursuing this special department with uniform skill and good judgment, without having a knowledge of all the rest. In medicine all the departments of it are necessary members of the same body, fitly joined together, and mutually interdependent.

I am led to these observations because specialties are alluring many good men to a course which pure enough in its inception, draws them on to methods highly reprehensible at last. This is not of necessity so, but the majority of the irregular practitioners who flaunt their gilded signs in the faces of the public, are recruited from the ranks of the regular profession.

Dr. Billings has expressed the idea very happily: "There must be specialties and specialists in medicine, and the results will be both good and evil; but the evils fall largely upon those specialists who have an insufficient general education, who attempt to construct the pyramid of their knowledge with the small end as a foundation."*

Older physicians are called upon to advise their younger professional friends as to what specialty they had better pursue. I believe that experience shows that the best specialists only became so by a fortuitous train of circumstances. For example, a young physician settles in a city. By accident he has among his first cases, several fractures. He feels the weight of the responsibility knowing that his failures may become living examples of his lack of skill and knowledge. This impels him to study closely the whole range of the surgery of fractures, and his successes or even his failures may be a turning point in his career. Year after year he may have rather more surgery than his neighbors, until at last he finds himself recognized as a surgeon of special ability, and this, if he is an ambitious and a conscientious man, will make him more desirous to merit his fame. And so without having any particular leaning towards this specialty, almost irresistably he becomes a specialist. The career of many obstetricians, and surgeons in this country, has been determined by such a train of circumstances.

The Bulletins of Societies wherever science is cultivated are plethoric with the accumulated observations of plodding men. Yesterday, the announcement that a man might speak, sing, laugh or

*Our Medical Literature. Address by Dr. Billings before International Medica Congress.—*Lancet*, 1881, p. 334.

perform any other feat of which the voice is capable in audible tones, to another many miles away, by the interposition of telegraph wire, was received with smiles of incredulity; but to-day those who were willing to sneer at this, were crowding eagerly to see the storing up of recognizable sounds upon a sheet of lead, to hear the identical laughing, whistling, coughing, or what not, reproduced by a simple mechanical contrivance.

Science has been long drudging at principles, long working over and over again old truths in order to verify them, but now we see her emerging from her mysterious seclusion into the open day, bearing in her hands choice gifts to cure our diseases, to minister to our comfort, to make our lives brighter and more useful. So intimately connected has been natural science with medicine, no wonder that we physicians feel that she was born of us. To her care we entrusted unreservedly our first discoveries. For her patient toil, we owe a good return for this confidence. To us she brings priceless gifts for all afflicted humanity, without stint, without grudging. She demands of us truth, patience, perseverance. These are the terms upon which we keep her company, and so it will be on down to the brilliant end, this partner of our toils will share with us her glory and her honor.

CONJOINT SESSION.

Preventive Medicine:

An Essay

Read before the Conjoint Session of the North Carolina Board of Health and the Medical Society of North Carolina, at Concord, May, 1882.

By W. P. BEALL, M. D.,
GREENSBOROUGH.

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BY

W. P. BEALL, M. D., Greensborough, N. C.

The appointment of myself as essayist for this occasion was a very unexpected honor; and while I value very highly the compliment thus paid me, it has imposed upon me a duty for which I find myself very illy prepared.

Upon no subject pertaining to medicine could I hope to present, from my own limited experience, anything which would not be as trite and familiar as "twice told tales" to the members of this Society; and there was nothing in the literature of medicine within my reach, which was not equally accessible to you.

Recognizing and appreciating my difficulties in securing a suitable topic, you will, I feel sure, pardon any failure on my part in presenting anything new for your consideration.

Having been greatly impressed during the past winter by the general indifference to the subject of Preventive Medicine, and the almost universal neglect of its plainest principles, I have endeavored to collect here some facts showing the importance and progress of this science, and to call attention to some of the difficulties with which it has to contend.

By the term Preventive Medicine, as used in this paper, is meant any and all means, which, intelligently used, tend to promote existing health, and to reduce to a minimum

the ravages of any disease. This, of course, embraces much, that is, strictly speaking, outside of the province of the physician; as sanitary engineering, removal and disposal of filth, the proper location and construction of dwellings, etc., but in this country the physician is practically the custodian of the public health, and should be qualified to give intelligent advice on all these points.

The importance of my subject is self-evident. If the science of medicine, when applied to the healing of disease, is one of the noblest to which man can devote his time and talents, how much nobler is it when it strives to invade the strongholds of disease, and, by restricting and limiting the avenues through which it makes its attacks, adds immensely to the wealth, prosperity, and happiness of mankind. Preventive Medicine is indeed "the highest department of the art of the physician."

The great need for a comprehensive and practical system of Preventive Medicine is as obvious as is the importance of the subject, for nothing is more thoroughly recognized than the fact that a very large proportion of the annual mortality of this country is due to causes clearly preventable.

The usual estimate among sanitarians is, that by the adoption, by individuals and communities, of proper modes of life, nearly half of the disease now existing might be abolished, and the annual mortality reduced to not more than 15 per 1,000.

Taking, for comparison, the report of the National Board of Health, I find the mortality for 1881, in one hundred and sixty-one towns and cities of the United States, representing a population of over 8,500,000, to be 24.7 per 1,000, or nearly 10 deaths per 1,000 in excess of the above estimate.

That this estimate of the reduction possible is not extravagant, is proven by what Preventive Medicine has already been able to accomplish.

In England where this science is further advanced than elsewhere, and where an elaborate system of vital statistics

is in force, it has been shown that by intelligent sanitary work in certain groups of towns, where the previously existing rate of mortality was accurately known, a reduction in death rate of from 4 to 7 per 1,000 was effected.

The mortality of New York City in 1867 was ascertained by her Board of Health to be about 36 per 1,000, and the deaths among children under five years of age constituted 53 per cent. of total mortality. In 1881, with a population larger by 33 per cent., and with no special change in its character, habits or surroundings, except improvement in drainage and sewerage and better ventilation of dwellings, and some enforced cleanliness, the mortality was 31.9 per 1,000, and the deaths among children under five were 45 per cent. of total mortality. Here is a reduction in general death rate of over 10 per cent., and New York is still one of the unhealthiest cities in the United States.

Such a reduction as this in the mortality existing among our 50,000,000 of population, would amount to more than 300,000 lives annually, to say nothing of the immense amount of suffering and sorrow and loss thereby obviated.

We already know that many of the diseases now in existence can be destroyed, or greatly lessened in severity by the use of proper means, and as our knowledge of etiology increases, it is highly probable that the list of preventable diseases will be considerably extended.

Important as is this subject, it is grossly neglected. The report of the yellow fever commission shows this to be an imported disease, and should be easily preventable by the rigid enforcement of quarantine; yet in 1878, the whole country mourned over its fearful ravages in the Mississippi Valley.

No fact in medicine is more clearly established than that small pox is easily preventable, and at very slight expense; yet it was last year declared epidemic in the United States by the National Board of Health, and over 4,000 deaths from this disease were reported. In the City of Richmond

during the five months ending March 1st, 1882, the deaths from small pox were 19.5 per cent. of the total mortality for the same time.

The experience of every physician, who had anything to do with vaccination during the past winter, could not fail to impress upon him the alarming lack of protection against small pox existing in this State.

During the month of January I vaccinated about 200 persons, white, 96 of whom had been vaccinated previously as shown by scars, and of these revaccinations 48, or exactly 50 per cent., were successful, showing that about 75 per cent. of number vaccinated were unprotected. The condition of our negro population is even worse. Of more than 400 vaccinations made by our county physician among them, four-fifths were primary, and the average age of these primary cases was $12\frac{1}{2}$ years.

All the means within our reach for advancing this work should be vigorously used. While educating ourselves let us strive to instruct the laity in the fundamental principles of this science, that we may the sooner obtain their active co-operation. Every physician is an authority among his own patients, and sound sanitary advice, given and reiterated, will at length be accepted and acted upon. Our people are not slow to avail themselves of a recognized good, and as they are made aware of the benefits of Preventive Medicine, and appreciate the advantages to be obtained, they will be willing to devote a portion of the wealth, saved to them by this science, to aid in investigating still further the causes of disease, and will cheerfully defray the expense of removing, as much as possible, these hurtful causes.

The formation of local sanitary associations would be a long step in the right direction, for as soon as the benefits of such organizations became manifest, it would be comparatively easy to extend their scope so as to embrace counties and State, and gradually to pave the way toward the adoption of a National system of Preventive Medicine; for

such a system can work only through State and local organizations.

The statistics of Great Britain show that all sanitary improvements exhibit their good effects most plainly in reducing the mortality of typhoid fever, phthisis and the intestinal diseases; this reduction being in some instances as high as 60 per cent., showing plainly that all these are in a great measure preventable. Indeed, it is generally conceded that a large proportion of the mortality of diarrhœal diseases is due to removable causes; and yet over 10 per cent. of the total mortality reported by the National Board of Health for last year is placed under this head.

In regard to phthisis, the investigations of Bowditch, in Massachusetts, and of Buchanan and Simon in England, seem to prove conclusively that a large proportion of the cases of this disease is due to soil dampness. Mr. Simon says of this investigation, "It confirms, without any possibility of question, the conclusion previously suggested, that dampness of soil is a very important cause of phthisis to the population living upon such soil."

These facts surely give us a large field in which to labor, and it is steadily increasing in size. Trained experimenters are actively engaged in studying the causes of disease in the field of experimental comparative pathology, and this is a work only valuable when done by those whose special training gives authority to their discoveries and deductions.

All of you no doubt are familiar with Pasteur's investigations of splenic fever, which have already resulted in great pecuniary advantage to France, and may in the future lead to results in the interests of Preventive Medicine at present scarcely dreamed of.

In this country also, we have scientific investigators busily pursuing various lines of inquiry, some of them under the direction of the National Board, and we are given the benefit of their discoveries, and the application of them rests with the active practitioner.

Interest in the subject is on the increase, and it is becoming more and more evident that Preventive Medicine is destined in the near future to take an important position in the economy of society. Fifteen years ago there was not, I believe, a single State Board of Health in existence. To-day such organizations exist in twenty-seven States. We have a National Board of Health and an American Public Health Association, both active and working organizations composed of the foremost sanitarians of this country.

All this looks very encouraging, but we must remember that the most elaborate machinery is valueless for the purposes for which it is intended without sufficient motive power, and as Dr. Wood has pointed out, some of these State Boards exist only in name, doing nothing to advance the cause for which they were created. Indeed, the difficulties in the way of the prosecution of this work are many and formidable.

One great obstacle to progress is the indifference of the general public, an indifference born of ignorance. A man will promptly avail himself of the services of a physician when he feels himself to be sick. But being ignorant of the various predisposing and exciting causes of disease to which he is exposed, he is slow to adopt any prophylaxis against an unrecognized danger. Or, if perchance, he should be induced to make use of such precautions as science places before him, and thus escapes disease, he is very prone to ascribe his immunity to chance, rather than to regard it as the result of the means employed.

Another serious difficulty is our lack of information as to the actual condition of public health. We cannot urge the necessity for Preventine Medicine when we have no data to which we can refer. For instance, typhoid fever prevailed to a considerable extent throughout the State last fall and winter, but we have no certain means of knowing whether it was more prevalent than usual, or if its mortality ex-

ceeded the usual rate. In other words we have no statistics for comparison.

In this connection I cannot do better than to give you the opinion of Dr. Billings, Vice-President of the National Board of Health.

"At present, the most urgent need of sanitary science in this country is a uniform system of registration of the principle diseases; and next to this, a similar system of registration of births and deaths. The absence of the information which such registration would give, is one of the greatest obstacles to hygienic progress; for it is due to this that our legislators and political economists do not take the hygiene of the people into consideration, except in a few special cases."

The importance of the subject and the necessity for some action in the premises being admitted, the question at once arises upon whom shall this work devolve? Upon whom, if not upon the medical profession, who have in charge the health of the public, and are bound by every consideration not to neglect this charge.

True, we need the active co-operation of the public, conferring legal authority, and bestowing payment for services rendered, but indifference on the part of the laity will not excuse our neglect. The duty of the physician, as formulated by the Hon. Erastus Brooks, is "to reduce mortality among the people at large, to save them from physical pain, and to cure the sick:" and, as we are culpable if, in the treatment of an individual, we fail to give him the benefit of all curative means in our reach, so are we to blame if we do not give the public the same advantages. Some one must do pioneer work in every new enterprise, and it is incumbent on us, as a society and as individuals, to labor earnestly in this work, sustained by a firm conviction that the future will show the good results of our labor.

We must so familiarize ourselves with the whole subject as to have intelligent and decided convictions, which we

can present to, and impress upon, the public until it is sufficiently educated to second heartily our efforts for its welfare.

We should study to know what are the disputed as well as the established points in this science, that we may be in a position to observe intelligently the phenomena of disease occurring before our eyes. Says Dr. Billings: "Every epidemic, great or small, even if there be but three cases showing a community of origin, is an experiment performed for the observer, one which he cannot and dare not perform for himself, and which will never be repeated in all its details. Hence the immense importance of knowing *how* to observe, which, in most cases, includes the knowing what to observe and *what to omit.*"

While educating ourselves we should in every way impress the importance of this subject upon the people. Every physician is an authority among his own patients, and sound sanitary advice given and reiterated by him will at last be accepted and acted upon.

By supporting and seconding the State Board in its work much can be done. The collection of vital statistics for this State is imperatively demanded, and the value of such statistics will be in direct proportion to their completeness and the extent of territory which they represent; and though the value of such work may not be at once apparent, it will become very manifest as the results accumulate.

Under the law enacted by the last Legislature, requiring the return to the tax lister of all deaths occurring in each family during the past year, we may get some approximately accurate statistics under this head, but there is no provision for the registration of diseases or of births, both of which items are as important as the death rate. It would require but little time from each physician to keep a record of the various important diseases which he daily sees, and these records consolidated would be of very great value to

both county and State. Is it asking too much of each physician to give fifteen minutes daily to this important matter?

While this science claims the attention of all, its study is especially incumbent upon the younger members of our profession, for upon us, year by year, will devolve the task of maintaining for our State the honorable place in the line of progress won for her by our predecessors, and we will prove traitors to them and to North Carolina if we neglect or ignore the trust reposed in us.

Let us then vigorously push forward the work already mapped out and begun by our elders, aided by their advice and guided by their experience, that, although we ourselves may not reap the fruits of our labors, our successors may be in a position to know what is the state of public health in North Carolina, and may find a broad foundation laid upon which they may rear a perfect system of Preventive Medicine.

REPORT.

OFFICE OF THE SECRETARY
Of the North Carolina Board of Health,
WILMINGTON, N. C., April 24th, 1882.

To the Medical Society of the State of North Carolina:

Since the last report of your Secretary, the work of the North Carolina Board of Health has been conducted with all the ability and energy possible under a law which provides no means.

The work of the first importance to the intelligent pursuit of State medicine in all its details is the collection and tabulation of

VITAL STATISTICS.

It will interest you therefore to know how this task has been performed by the Board. Our effort in behalf of the collection of statistics, as set forth in pages 10 and 11 of First Biennial Report, was confined to economic statistics, experience showing that without paid assistance, and a compulsory law, that nothing like a regular and correct system of returns could be expected.

The items upon which Superintendents of Health have been reporting monthly for the past two years are included in the following:

WEATHER AND PREVAILING DISEASES.

The population of the county; the prevailing winds; number of rainy days; days of snow; average temperature; the prevailing diseases; the number of cases of small pox, measles; whooping cough; scarlatina; diphtheria; yellow

fever; typhoid fever; pernicious malarial fever; cholera; hemorrhagic malarial fever.

CONDITION OF THE PUBLIC BUILDINGS.

The number of prisoners and inmates in jails, poor-houses, and houses of correction. The cubic space of air allowed to each and the quality and quantity of food and drinking water. The number giving evidence of successful vaccination.

PUBLIC SCHOOLS.

The number, character of buildings, ventilation, condition of outhouses and wells.

SANITARY CONDITION OF COUNTY TOWN.

Drainage and sewerage of streets. Ventilation and heating of public buildings. Detailed accounts of any efforts made to get the attention of the public towards sanitary improvement. General remarks upon any matter appertaining to the sanitary condition of the county, and any suggestions looking to a more careful collection of statistical items.

Reports as above have been coming in with marked regularity from many of the Superintendents, but not more than thirty counties are now reported regularly. The dropping off has been mainly due to the neglect on the part of individual physicians to report to the Superintendents. Indeed many of them are obliged to explain that their reports are made up almost entirely by their own unaided exertions. Whether or not these reports will be worth publishing, cannot be determined until they have been examined carefully and put in a proper shape. The clerical labor necessary to accomplish this end is, so far, beyond the means of the Board.

It was considered worth the trial to get a law enacted by the Legislature for the purpose of obtaining at the annual listing of taxes such depositions as could be easily obtained from each tax lister. It was seen that even if a law could be passed, covering all the items desirable, it would nevertheless fail to be a complete record, as unfortunately the number of persons liable to list taxes would not include a considerable portion of the population. It was also foreseen that of the number of persons liable to taxation, many neglected or evaded the law, making also another discrepancy. All things considered, this seemed to be the best preliminary step to take, and the following law was enacted:

"SECTION 1. It shall be the duty of each and every person annually, at the time when he or she or they shall list property for taxation, to make out and sign and deliver to the township assessor, on a blank prepared and furnished as hereafter provided, a statement as follows, to-wit: 1st. Whether married, unmarried, widow or widower. 2d. Number of births in the family within the year immediately preceding. 3d. Number of deaths in the family within the same time, and the names of diseases causing the deaths, as far as known. 4th. Whether any cases of the following diseases have occurred in the family for the year immediately preceding: Small Pox, Scarlet Fever, Diphtheria, Yellow Fever, Cholera.

SEC. 2. It shall be the duty of the State Board of Health annually to prepare and furnish to the commissioners of each county, at least thirty days before the time appointed by law for the listing of taxes, a sufficient number of blank forms, or lists, in which each tax payer or lister shall make out the statement required by section one of this act, which said blanks shall be distributed by the commissioners aforesaid to the township assessors at least five days before the time appointed by law for the listing of taxes. The form of said blanks shall be prescribed by the Secretary of the State Board of Health, and may be accompanied by a circular from said officer giving instructions in regard to filling out the same and information desired."

SEC. 3. The blanks so made out and delivered to the assessors, as provided for in section one of this act, shall be forwarded by them to the clerk of the board of commissioners in each and every county at the same time required by law for the return of the abstract of the tax list to said clerk. And it shall be the duty of said clerk to forward at once all of said blanks so returned to him to the Secretary of State, who, after noting

the same for record in his office, shall forward them to the Secretary of the State Board of Health.

SEC. 4. This act shall be in force from and after its ratification.

Ratified the 11th day of February, A. D. 1881.—*Chapter 73, Laws of* 1881.

Through the unforeseen inefficiency of the law many delays occurred in the distribution of blanks to the different counties, and although the National Board of Health generously and promptly came to the assistance of the Board, many remote counties failed to receive their blanks until after the time specified by law for tax listing.

The blank sent out to be filled up by the tax lister was made up by the Board of Health, as follows:

VITAL STATISTICS FORM.

(*To accompany the Tax-List Blank, prepared in accordance with Chaptes* 73, *Laws of* 1881, *ratified February* 11, 1881.)

The person about to list taxes will answer the following questions in writing:

Are you Married? Unmarried? Widow? Or Widower?

(*Answer* YES *or* NO, *under the proper heading.*)

MARRIED.		UNMARRIED.		WIDOW.		WIDOWER.	
WHITE.	COLORED.	WHITE.	COLORED.	WHITE.	COLORED.	WHITE.	COLORED.

Give in writing the number of Births in the family for the past year.

NUMBER OF CHILDREN BORN.			
MALES.		FEMALES.	
WHITE.	COLORED.	WHITE.	COLORED.

Give number of Deaths in the family for the past year, naming the disease which caused death, if known.

MALES.		FEMALES.		OF WHAT DISEASE.
WHITE.	COLORED.	WHITE.	COLORED.	

Have any cases of Small Pox, Scarlet Fever, Diptheria, Yellow Fever, or Cholera occurred in your family in the past twelve months?

(Give number under the appropriate heading.)

SMALL POX.		SCAR. FEVER.		DIPHTHERIA		YEL'W FE VER		CHOLERA.	
White.	Col'red	White.	Col'ed.	White.	Col'ed.	White.	Col'ed.	White.	Col'ed.

The returns have been sent in by the Secretary of the State, and are being tabulated as speedily as our limited clerical help will allow. It is premature, perhaps, to express an opinion as to the result, but gross carelessness and indifference on the part of the *paid* officers entrusted with the work is everywhere apparent. Occasionally the returns of a whole township show conscientious care, but so far these examples are rare. However, the satisfactory returns point to the possibility of getting correct statistics in this way, and it seems to the Board it should suggest to our legislators the propriety of requiring her paid officers to do her work properly.

The following example is given of the returns from the county of Anson, and will show, perhaps, the most reliable report made:

STATISTICAL RETURN OF THE COUNTY OF ANSON, FOR 1881.

SOCIAL CONDITION.									BIRTHS.				DEATHS.			
Married.		Unmarried.		Widow		Wid'er.		Total.	Males.		F'm'les		Males.		F'm'les	
W.	Col.	W.	Col.	W.	Col	W.	Col		W.	Col	W.	Col	W.	Col	W.	Col
701	368	153	44	63	2	26	8	1,355	99	64	73	63	21	25	25	16

CAUSES OF DEATH IN ANSON COUNTY.

WHITES.

Accident	1
Old Age	1
Cramp	1
Ulcerated Tongue	1
Heart Disease	1
Typhoid Fever	2
Cholera Infantum	2
Hives	2
Cancer	1
Dropsy	1
Croup	1
Consumption	1
Thrash	1
Chill and Fever	1
Congestion Brain	1
Congestion Lungs	1
Pneumonia	1
Lung Disease	1
Bright's Disease	1
Indigestion	1
Paralysis	1
Unknown	13
	37

BLACKS.

Consumption	1
Gravel	2
Scrofula	1
Old Age	1
Liver Disease	1
Heart Disease	1
Typhoid Fever	1
Pneumonia	1
Smothered	1
Choked	1
Croup	1
Hives	1
Dysentery	2
Convulsions	1
Cold	1
Fracture Skull	1
Unknown	21
	39

It may not appear to this Society that what has been already done towards inaugurating vital statistics record amounts to much, but it must be remembered that very few facilities have been at the disposal of the Board, and no money to pay for clerical help. The Board has furnished all the means so far expended, and but for this the work would have stopped long ago.

The science of statistics was more thoroughly considered in our tenth and last census than ever before. General Walker brought into service every possible means, and succeeded in imparting his enthusiasm to volunteers throughout the country. His appeal to the American Medical Association to aid him in the collection of mortality statistics met with favor. He distributed to every doctor in the country whose address could be obtained a memorandum book in which to record the deaths occurring in his practice for twelve months.

Dr. J. S. Billings, the distinguished statistician and bibliographer, has made an analysis of these reports, which we may here consider with interest.

To North Carolina 1,706 books were sent. Of this number 467 were returned to the Census Bureau, 23 reporting no deaths and 444 reporting deaths, giving a total of 27 per centum reporting. Some States gave a larger percentage of reports, some less. The report though shows that there has been an increase, census by census, of the total returns; shows a "much more complete result than obtained in previous censuses."

It appears from the census of 1880, by computation for those not reporting, that the death-rate would be stated at 15 per thousand. Not meaning, however, that in the United States we are actually blessed with such a remarkably low mortality, but that the returns were not accurate.

This review shows an increasing interest in the collection of statistics and should serve as an encouragement to the officials of our State to strive for greater accuracy. It will

be slow work educating people to the importance of statistical returns, and it is necessary that we should make the best of every phase of progress we can detect. If you can enlist the aid of the press in behalf of this object it will not be many years before the statistical tables of our State will be relied upon. We cannot expect to have success except by slow and difficult approaches. Rhode Island, Michigan and Massachusetts have statistical bureaus, under the charge of competent managers. The necessity of the work is there acknowledged by supplying adequate means for its accomplishment.

It may not be necessary to traverse again the argument for the necessity of vital statistics. The citizen who has not already received this conviction has not gone very deep in the study of preventive medicine. The Board is very desirous that the members of the State Medical Society should give their close attention and continuous support to the measures we have already inaugurated. It is possible to bring this work forcibly to the attention of our representatives before they assemble at the capital. The friends of the work must have thorough convictions though before they can convince others, and we ask that the subject receive serious consideration by every doctor in the State, not only in this connection, but in connection with all the matters of State medicine requiring legislative action.

THE ADULTERATION OF FOOD-SUBSTANCES.

Statements were so frequently made in the daily press, and even special articles were contributed in large numbers on the subject of FOOD ADULTERATIONS, so that it seemed incumbent on the Board to afford to the citizens of the State every opportunity to settle the questions of adulteration and sophistication. This course was more necessary because a large number of the food-substances consumed in this State were derived from the same sources as other food-substances

alleged to be occasionally adulterated or sophisticated in a manner harmful to the health.

The Board of Health issued the following circular:

To Householders and other persons interested in the prevention of the adulteration of Food-Substances and Medicines:

The North Carolina Board of Health, recognizing the wide-spread interest of the public in the rumored frequent adulteration of food-substances and drugs, desires to give every facility to detect adulterations or quiet unfounded suspicions. While the Board does not share in the frequent public statements of the harmful adulteration and cheats in the food we eat, the liquids we drink and the medicines we give, it was deemed advisable to offer as many as desired it, up to the full capacity of the laboratory, analyses of suspected articles.

The list of articles given below need not be the limit of the enquiry, but may serve to direct attention to the classes of articles:

FOOD-SUBSTANCES.

Soda, saleratus, baking powder, cream of tartar, sugar, milk, butter, liquors, flour, &c., &c.

DRUGS.

Paregoric, laudanum, quinine, opium, and such articles as are usually sold for domestic use.

Upon application to the Superintendent of Health of your county, you can procure the necessary information.

THOMAS F. WOOD, Secretary.

A circular was issued to Superintendents of Health requesting them to give such publicity as their means allowed to the fact, that preparation had been made at the Agricultural Station to analyze food-substances and drugs, in such quantities as not to over-tax the ability of the chemist.

In addition to the distribution of these blanks through the mail, several of the most influential papers in the State* inserted the announcement of the Board, asking attention to the matter editorially. So far very few applications have

*The Secretary feels called upon to thank especially the *North Carolina Presbyterian*, *The Morning Star*, *The Daily Review* of Wilmington, and the *News and Observer* of Raleigh, for their aid in bringing prominently before the public the work undertaken by the Board.

been made, indicating that there is not a wide-spread suspicion of food-substances and medicines.

The opportunity offered by the Board is still extended to the citizens of the State, and with the increased facilities of the Chemist of the Agricultural Department, (who by the law is also Chemist of the State Board of Health,) in the new and improved quarters of the Department, increased opportunities will be available for this and similar purposes of the Board.

It is not necessary at this time to call attention to particular nature of the cheats in food-substances and medicines. Our limited experience points to the conclusion that communities suffer not so much from the great harmfulness of substances used for adulteration, but from an economical point of view, by the excessive prices paid for food containing cheap and worthless substances. It is proper to remark in this connection that the excessive zeal of would-be sanitarians, has greatly exaggerated the dangers of adulterations. Very much has been said about the adulteration of sugar and syrup with glucose, as though there was risk to health to consumers of these substances so adulterated. This is not so. Glucose is no way harmful, but is a legitimate article of food. It is an abominable cheat, though, to adulterate cane syrup and sugar with glucose and levulose, and put them upon the market with a fraudulent brand.

The same objections must be made to the often repeated assertions about the adulterations of alcoholic beverages. It is a popular belief that pure liquors do no harm, and that the adulterations alone cause all the mischief. But liquors are not adulterated with expensive materials, particularly in this country, and seldom with harmful substances.

Coloring substances such as burnt sugar and dried apples, and saccharine matter to give a bead to whisky and brandy, are among the most common adulterations. It is useless to disguise the real state of the case, by charging adulterations

with the evil results from beverages, for really the least harmful substances contained in them are those introduced to adulterate. It is alcohol, and alcohol alone that is chargeable with the diseases which ensue from excessive indulgence in beverages. We, as physicians, need not be reminded that cirrhosis, and wrist drop, and drunkard's epilepsy, and a long list of diseases are due to alcohol; but the public needs instruction on this subject.

These illustrations are introduced to serve to show, that good and zealous men, as well as charlatans—false teachers—are endangering the opportunities afforded us, the Board of Health, to accomplish great good by a steady and rational progress in the good opinion of the public, by putting their half-seasoned knowledge, and startling observations before the public. The re-action is sure to follow, and the success of our cause will be delayed just in proportion to our false teaching.

There is some cause of anxiety as far as the medical profession is concerned, in regard to the adulteration and improper quality of drugs. Not all the Cinchona sold under that name would give the tonic and anti-periodic and other therapeutical results claimed for it by our teachers, and expected to result in accordance with our experience, because very few specimens of bark would yield the same percentage of quinia or other alkaloids, and it would be a lucky chance that would enable a physician to secure a specimen of Cinchona bark that would yield 10 per cent. of quinia.

Professor C. Lewis Diehl, a member of the Committee of Revision and Publication of the Ph. U. S. of 1880, made an excellent report to National Board of Health,* on the "*Deterioration, Adulteration, and Substitution of Drugs,*" which deserves to be studiously considered by the medical profession. Some quotations from this valuable paper will serve to bring the whole subject more conspicuously before your minds.

*National Board of Health Supplement, No. 6, 1881.

"One need not be a physician to appreciate the fact that satisfactory medication is impossible when the medicine administered is not that designed by the prescriber. It is not sufficient that the medicine should "very nearly" be that which is designed; it should "absolutely" correspond to the standard which the physician has before his mind at the time when he finds it necessary to prescribe it. It is therefore the duty of the dispenser to see to it that the medicines he dispenses conform in every respect to the standard that has been framed for his guidance as well as for the guidance of the physician. The fulfillment of these conditions depends not alone on the integrity of the dispenser, it depends equally on his knowledge and skill; and unless these are combined with integrity, the prescriber cannot hope for results which the nature of the disease may justify him to expect. Finding that the medicine has not the expected effect, the prescriber may be led to increase the dose, or to replace that originally prescribed by another, without, however, ameliorating the disease or causing it to yield to his treatment. He now, perchance, begins to suspect that the medicine supplied is not as it should be, and, changing his apothecary, soon cures his patient. If all cases of bad medication were as simple in their development as the one illustrated, there would perhaps be no necessity for this report. Unfortunately, however, such is not the case. It quite often happens that the diagnosis being well established, it is urgent that the proper medicine should be promptly administered. If in a case of this nature the medicine should happen to be of indifferent or inferior quality, the life of the patient is placed in jeopardy, and under circumstances sacrificed. Again, the prescriber, conforming the medication to his diagnosis, may be led to reject that originally made, because he fails to obtain the effect which an abundant experience justifies him to expect from the drug administered. In a case of this kind, he may for a time be completely at fault while the illness of his patient is vexatiously prolonged or it may be aggravated. In short, the use of inferior and adulterated medicines may be the cause of protracted disease, of increased suffering, and in some instances of death; and failing to mitigate and cure diseases in which the pure medicine is unequivocally indicated, they may lead the physician to errors in diagnosis, cause him to acquire the habit of prescribing large doses of active medicines, and in fact seriously affect his success and reputation.

Finally, there are many medicines that are in daily demand over the counter of the druggist as household remedies, with or without the sanction of the physician. Many of these are of an innocent nature, and being used for trifling ailments, any variation in their strength is not attended with serious consequences. Others, however, are quite active agents, or contain such. This is particularly the case with preparations containing opium, for all of which commonly dispensed there exist either officinal or other authoritative formulas. It is plainly the duty of the dis-

penser to adhere to such authoritative formulas, whether officinal or not; but from motives of gain and competition the preparations of some shops contain variable quantities of opium, often one-half or less of that which is proper, and this is true equally of the more powerful ones and of the weaker preparations intended for the infant. Naturally the dose of such a weak preparation is increased until the desired effect is obtained, and all works well until the supply is replenished by some conscientious dealer, when, as is unavoidable, an overdose is the result, attended with more or less serious consequences."

Let us take from the ample list furnished by Prof. Diehl a few of the articles commonly prescribed, and examine the amount of impurity or inferiority:

	Name of Drug		Where Produced.	Causes of Inferiority.		Commercial Quality.
				Impurities & Deteriorati'ns.	Adulterati'ns & Substitutes.	
27	Aloes	....do....	Barbadoes, Cape of Good Hope, Socotra, &c.	Extraneous impurities introduced by process of preparation.	Extraneous impurities in undue quantities. Inferior grades substituted for the more valuable.	Care must be exercised in purchasing the prepared grades, both whole and powder.
78	Cinchona	Imported..	South America, cultivated in East Indies, Java, &c.		Inferior barks are often sold and substituted for those of known value. Spurious barks were formerly met, but are now very rare. Poor barks enriched with chinioidine.	Good barks can be obtained from respectable dealers. There is, however, much inferior bark in the market, which, owing to ignorance or for other reasons, is demanded.
76	Chloroform	....do....	....do....	Often insufficiently purifi'd, containing foreign chlorinat'd compou'ds. Liable to spontaneous change when too strong, particularly when exp's'd to light, with formation of phosgene gas.	Impure chloroform sold for pure.	Some manufactur'rs furnish a pure chloroform at fair prices. Others seem to be entirely oblivious to the necessity of furnishing chloroform of even moderate purity.
65	Cantharis	....do....	Southern and Central Europe and Western Asia.	Suffers by age and exposure; liable to be attacked by mites.	Powder sometimes adulterated with euphorbium. The flies sometimes extracted with alcohol and redried. Rendered weighty with fixed oils. Admixed with other insects.	Variable on account of liability to change.
92	Digitalis	Imported..	Europe	Liable to mustiness and other changes on exposure.	The leaves of the first year's growth substituted. The leaves of *Digitalis ochroleuca*, of species of *Verbascum*, *Conyza squarrosa*, *Symphytum officinale*, *Inula helenium*, have been substituted, probably ignorantly.	Fair.
95	Ergota	....do....	Europe	Deteriorates by keepi'g, particularly if in powder; becomes quite rancid. Liable to attack of mites.	The ergot of other graminæ, as barley, oats, &c., sometimes substituted or admixed.	Fair, but liable to vary according to age or care in keeping.
123	Ipecacuanha	Imported..	Brazil, New Granada, Bolivia.	Extraneous portions of the plant.	Other South Americ'n emetic roots substituted and used as adulterants, such as striated, small striated, undulated or farinaceous, white ligneous, bastard and Indian ipecacuanha, all of which are totally different from the true root.	Fair.

It is not necessary to quote more of this thorough paper to show at what a great disadvantage physicians may be placed by the varying quality of the drugs they prescribe or dispense. The harm here indicated is yearly becoming greater owing to the increasingly wide separation of pharmacy from the practice of medicine. The profession seems to dread the stigma once placed upon the apothecary in the *Seventeenth Century*, by Boyelin. "The druggist must be mindful that he is but the physician's cook," says this quaint old author, but the physician would be far more mindful of his own interests if he knew enough to direct this *cook*, or do the "cooking"—the selection and preparation of his own drugs. This is impossible in most cases, but it does not release the physician of the responsibility of being well trained in pharmacognosy, so that he will have the ability to detect in what particulars any given remedy is not yielding the expected results.

The practice of buying supplies of drugs from dealers who give the best terms and sell the cheapest articles, may cost the physician in the end bitter disappointment, and sometimes great damage to his practice. It is decidedly a retrogression to give up the drilling of students in the appearances and qualities of drug substances. The physician who teaches his students thoroughly the art of pharmacognosy is doing more to bring about a new era in the quality of drugs sold, than the fortunate committee that succeeds in getting an anti-adulteration law through our Legislature.

"THE RELATION OF NOSTRUMS TO THE PUBLIC HEALTH"

is becoming an important public question. A few years ago a chemist by the name of Hoffman issued an almanac as a set off to the flood of patent medicine almanacs distributed in many languages all over the land. Mr. Hoffman conceived the idea that by carefully analyzing the various secret preparations on the market, he would demonstrate

rationally the utter worthlessness or harmfulness of most of them. Singularly enough he got a very feeble support from the medical profession, and the wealthy cure-all proprietors succeeded in silencing him. This was a movement in the right direction evidently, and if it could have been sustained by sufficient means, it would have educated many nostrums out of the market.

Prof. Albert B. Prescott has given careful attention to this subject, and in a communication,* read before Michigan State Sanitary Convention held at Battle Creek in March, 1881, he thoroughly traversed "The Relation of Nostrums to the Public Health."

It would be a good investment by the State Board of Health to publish this paper for the information of the people. An extract from this valuable paper will show the spirit in which it is conceived:

"Now to what extent are the so-called "patent medicines" consumed in the United States, in the State of Michigan, in the civilized world? In the absence of statistics, an estimate sufficient for present considerations may be asked of any person who walks abroad in these days. A few years ago an inquirer drew the conclusion that about eighty million dollars worth are annually sold in the United States, this being at the rate of two dollars for each man, woman and child in our country. This may be below the true estimate. But it is an outlay exceeding that for some things in which we are held to be liberal. For the salaries of all the teachers in all the public schools of this proud State of Michigan the yearly payment amounts to but one dollar and thirty-two cents for each inhabitant. The total expenses in the public schools of the United States do not require payment of over two dollars from each inhabitant. We may claim, then, an equal liberality toward public schools and patent medicines, with partiality toward neither. In England, in 1879, the stamp tax on nostrums was two-thirds of a million of dollars. In Germany, although the law has undertaken to restrict or prohibit them, they are sold in immense quantities, American nostrums competing sharply with those of the *Vaterland*. In spite of regulations by the French Government, Paris is a centre of trade in the nostrums of the world. Russia is plagued with them, and licenses a part and prohibits the rest.

*New Remedies, July and August, 1881.

The Swiss Federation has been trying to prohibit the sale or advertisement of medicines of secret composition. Belgium is setting about to prohibit their importation; she will not tolerate humbugs of foreign origin. The United States taxes them. A single proprietor, perhaps not the most extensive, has paid our government $120,000 per annum for stamps to put upon the nostrums of his own production. At retail, then, the people paid three million dollars a year for this man's wares, and his own annual income was not far from one million dollars. This amount equals the average net income of a railroad three hundred and eighty-four miles long, in the United States, in the year for which this comparison was made. There are extensive wholesale dealers in "patent medicines" alone, and the catalogue of a single house has included fifteen hundred kinds of nostrums. No small share of the trade of the fifteen thousand drug stores, and of a considerable number of grocery stores in the United States, consists in the sale of nostrums, and yet a single "patent medicine king" may make as much net profit in a fortunate year as all the retail drug stores in a city like Detroit, with their patient service of filling prescriptions by day and night, and with their paltry commissions on the nostrums included. How much is paid for advertising nostrums who can tell? Some one has said over ten million of dollars a year. Enough to give over twenty universities of the first class, with free instruction, a better support than Harvard possesses. You have a piece of property to sell, or a legitimate and thriving business to cultivate, and you advertise it liberally in one or two of your local papers, but a man who is putting a pill on the market will fill up a larger space than yours, and his advertisement will be spread out in the newspapers of every city in the country,—his paltry tokens will be displayed along the dead walls of a hundred thoroughfares,—the types may be already setting up translations of his bragadocio in the newspapers of other nations.

"But what is the actual average nature of the nostrums of the civilized world, to take them as they really are—in nothing to extenuate nor set down aught in malice—what is their power upon the body and their influence upon the health of the people at large? We limit our inquiry to such as are distinctively nostrums—that is bearing no practically true statement of their constituents, and we must of course depend upon the results of chemical analysis for our information of the substances that are in them."

"Probably the most extreme illustration of what may be called the tragical side of the nostrum business is to be found in an uncovered view of the operations of the "cures for the opium habit." The writer has analyzed enough of these, and read enough of the feverish correspondence of their victims. In almost all cases the articles consist wholly of morphine, disguised in colored and flavored solution. In a few cases,

quinine or cinchonidine, as a tonic, is substituted for a part and at times for all of the morphine. The strength of the solution, for the same patient, changes from time to time, and changes of the tonics have been found. The operator advertises, with reserve, little more than the words OPIUM HABIT, *cure*, and his address. To inquirers, he invites a letter from the opium-taker himself. When he gets this he is ready. He sends a highly wrought pamphlet, with a vivid portraiture of the power and pains of the habit, made up from the most morbid literature, of this subject, intensified by narrations of the wildest experience, and toned with the most assuring sympathy. It would be enough to drive a susceptible person into the opium habit just to read it. Those who are but slightly addicted to opium, or invalids just beginning to depend on it, take on the impression that they are hopelessly enslaved. But the promise of cure is certain, and the certificates enough to prove charcoal to be white. The remedy is costly, but it is ordered. It comes in fixed quantity to last exactly thirty days, with most positive instructions to take just the required doses of the mysterious liquid, under penalty of great danger from any variation. The patient, for such he is called, begins. At first he is rejoiced that he can do without his morphine, then suspects that there is morphine in the unknown medicine and demands explanations, and makes complaints. Constant correspondence is insisted on, frankness required, and every doubt is met with decision. So the pathetic farce is protracted; on the one side, art and audacity and cold, merciless persistence, on the other side alarm and hesitation and despairing appeals, until the judgment of friends or the service of an analyst dispels the illusion, and leaves the victim to realize that he is sold to his own habit by the one whom he engaged to defend himself against it. Whether the autocrat of the opium antidote ever uses his control to diminish the supply of the narcotic, and weaken the habit, cannot be positively declared, but such cases have not been found. And for this nostrum vendor, certainly the symbol of the spider and the fly would be too tame a trade-mark, and his own service with chain and ball not too severe a retribution."

Enough has been quoted of the work going on to check adulterations to show that we too are responsible for our share in this duty, and we could not better enlist our energies than in this field. We can promise ourselves more lasting results than by reiterated resolutions at our annual assemblies.

VACCINATION.

The following correspondence on the subject of vaccination is submitted:

AMERICAN PUBLIC HEALTH ASSOCIATION,
SECRETARY'S OFFICE, Boston, February 10, 1881.

DR. THOMAS F. WOOD,
Secretary North Carolina State Board of Health, Wilmington, N. C.:

DEAR DOCTOR: I have the honor to transmit the following resolution of the American Public Health Association, as offered by Dr. Jas. H. Letcher, of Kentucky, (amended by the Executive Committee,) and adopted by the Association at its eighth annual meeting, at New Orleans, La., December 10, 1880:

"WHEREAS, There are annually occurring in our large centres of population, and frequently in the provincial districts, numbers of cases of sickness and death from small pox; AND WHEREAS, the only certain method of restricting and preventing this loathsome disease is by vaccinnation and revaccinnation: therefore,

Resolved, That the Boards of Health of the several States in the Union, or where no State Boards of Health exist the State Medical Societies, be requested to take the matter under immediate advisement, and direct the attention of all local Boards of Health to the importance of seeing that all persons in their respective districts are properly protected by vaccination."

I am, with esteem, faithfully yours,
AZEL AMES, JR., *Secretary.*

NORTH CAROLINA BOARD OF HEALTH,
OFFICE OF THE SECRETARY,
THOMAS F. WOOD, M. D., Secretary.

WILMINGTON, N. C., Feb. 15th, 1881.

To the Superintendent of Health of ..... County:

SIR:—I transmit to you a copy of a resolution passed at the last meeting of the American Public Health Association. Notwithstanding the State law on the subject, I regret that little attention has been paid to vaccination by the County Boards. I am aware this has been in some measure due to the incompetency of the law, but as far as my means of observation has served me, there has been apathy apart from all this.

I take this opportunity of submitting some questions regarding the condition of the population in relation to vaccination, and would be obliged if such observations as occur to you on the subject be fully given. The ultimate object is to embody your answer in the next biennial report to the Legislature.

Yours very truly,

THOMAS F. WOOD.

QUESTIONS ON VACCINATION.

Has there been any small-pox in your County in the last five years?

Has vaccination been practiced generally?

From what source has your virus been procured?

What difference, if any, do you observe in the vaccine vesicles from:

(*a.*) Animal virus;

(*b.*) Humanized virus.

What amount of successes do you have from primary vaccinations?

What amount from revaccination?

Does there seem to be any lack of confidence as to the protective power of vaccination among the people?

Has any provision been made by the authorities for vaccination of inmates of Poor House? Prisoners in jail? Or Schools?

Please make any remarks on the subject which these interrogatories do not cover, as the design of the State Board of Health is to know the status of vaccination in the different counties.

It happened during the year that a more potent impulse was given to the subject of vaccination, than circular letters from the Boards of Health. Small pox broke out with great violence in Richmond, Va. The National Board of Health pronounced it epidemic, upon insufficient grounds, probably. In January, six cases of confluent small pox, and four of varioloid, showed themselves in Winston. The Board of Health of Forsyth county, with great energy and discretion, acted promptly in stamping out the disease. Vaccination was very generally performed at the public expense and by physicians in their private practice, so that no new cases appeared there.

In March, two cases of varioloid were discovered near Franklin, Macon county. These were promptly quarantined, and successfully suppressed. Vaccination was extensively performed by Dr. S. H. Lyle.

In April, a case of varioloid was discovered by Dr. John T. Schonwald on board the brig Cora Green from New York. This vessel unloaded her cargo at the Navassa Guano Works four miles above the city of Wilmington, before it was known that there was a case of varioloid on board. On her return to the city she was promptly towed down to the Lazaretto at Mt. Tirzah, four miles below the city, the officers and crew of the vessel were vaccinated, and no new cases made their appearance.

Many thousands of vaccinations in the aggregate were done in Wilmington, Winston, Salem, Greensboro', Charlotte, Goldsborough, Raleigh, Newbern, Fayetteville, Asheville, Salisbury, Warrenton, Chapel Hill, Wake Forest, Durham, Hillsborough, Weldon, Wilson, Tarborough, Greenville, Washington, Raleigh and Goldsborough Insane Asylums, Navassa Guano Factory, Pittsborough, Smithville, Selma, Statesville, and many other points in the State. The records sent in are not sufficiently accurate to be of any use. Heifer virus was very largely if not exclusively used.

In accordance with the law bulletins were issued in the form considered best adapted to the exigencies of the occasion, in the pamphlet which is here submitted:

Vaccination.—Advice from the North Carolina Board of Health on the Necessity of Vaccination; the Tests of Genuine Vaccination; and the Quality of Vaccine.

No argument is so potent in influencing the people to vaccinate as the presence of small-pox. Even those who calmly discuss the question when at a distance from the disease, and are inclined rather to take issue against the preventive power of vaccination, easily take the benefit of the doubt, when a case of small-pox comes close to them, and procure vaccination without delay. This is deemed an opportune time to issue a circular of warning and advice on the subject of VACCINATION, because of the appearance of small-pox in several States. Only a few cases are known to exist in one locality in this State, but its prevalence elsewhere, and the facility of communication of remote towns with each other, makes it highly probable that it will spread to a considerable extent.

THE VALUE OF VACCINATION.—Vaccination, if done with genuine fresh vaccine matter, is absolutely protective against small-pox. The hundreds of physicians and nurses who have been repeatedly exposed to small-pox, and have time and time again escaped from having even varioloid, attest its potency. In countries where compulsory vaccination has been enforced the number of deaths from small-pox is insignificant. American opinion is little divided on the efficaciousness of vaccination, and it is not deemed necessary to enter into an argument on the subject.

It is well known, though, that during the war and for a few years after the war, the protective power of vaccination was very seriously doubted by many, and dreaded by a great many more, because it seemed that the dangers of vaccination were as much to be dreaded as small-pox. It may be necessary, therefore, to explain the reasons of this eclipse which darkened the brilliant reputation of this great prophylactic, for it is still fresh—painfully fresh—in the minds of some.

The source of vaccine in this country was very variable and uncertain up to the year 1870. Vaccine crusts of *humanized vaccine*, (that is, vaccine procured by inoculating persons from arm to arm during many generations) furnished the entire country with virus. Those persons who paid the most attention to its propagation observed the utmost care that vaccine cultivated upon the arms of the healthiest children should only be employed and distributed as seed. When the war broke out, and large numbers of soldiers were brought together in camps, it became necessary to vaccinate and revaccinate the most of them. There was no known adequate source of vaccine at the time. In the Southern army anything went for a vaccine scab. Every soldier and every soldier's wife was a vaccinator. Without any knowledge of the condition of health of the person furnishing the scab, and without any knowledge of how a genuine scab should look, so-called vaccine matter was selected for seed, which was nothing but dried pus, and spurious vaccination was scattered broadcast. The exceedingly filthy sores produced by this matter was popular evidence that the vaccination had "taken" very well, and served to recommend it to neighbors who had not had the good fortune to be inoculated with it.

The spread of spurious vaccine among the soldiers and citizens of the Confederacy caused serious trouble to very many, several persons losing their arms, and many being sadly maimed by it, and of course none of them were protected by it. Indeed the so-called vaccination was practically nothing but the transplantation of purulent "matter" from one

person to another, yielding crops of foul ulcers and skin diseases of many degrees of severity, from contagious porrigo to syphilis.*

The two causes, therefore, which brought vaccination into disrepute, were the ignorant selection of seed, and its transplantation from one bad soil to another, until it at last bore no resemblance to the original seed planted, and many times was fraught with the severest calamity to the patient.

Fortunately now we are enabled to clear up all this history of vaccine disaster, thanks to the unremitting zeal of Dr. Henry A. Martin, of Boston.

Dr. Martin had been a student and propagator of vaccine for many years previous to the war, but the extensive field of study which the army put within his reach, had impelled him toward a solution of the difficulties he had encountered in his army experience of procuring reliable vaccine. It is not necessary to relate the whole story, but suffice it to say that he conceived the idea of importing the natural, spontaneous virus, which had made its appearance at Beaugency, in France. This was successfully done in 1870, (Sept. 23) and from that day can be dated the beginning of a radical reform in the practice of vaccination, a reform that can hardly be overestimated.

The practical results which issued from the introduction of *animal vaccine*† may be summed up as follows:

1. *Vaccine has been restored to all of its original activity and purity.*

2. *As it is propagated from one healthy heifer to another, by inoculation, the seed is propagated in its original soil, and does not degenerate.*

3. *It can be said that* ANIMAL VIRUS, (*unlike the virus obtained from the human subject,*) *never imparts any of the diseases (such as erysipelas, syphilis, porrigo, &c., &c.,) that humanized virus has been known to communicate.*

4. *That animal virus in the hands of experienced propagators can be supplied in quantities equal to the greatest demand, at reasonable notice.*

5. *That it is possible to procure enough original virus direct from the heifer to avoid the harmful practice of tapping forming vesicles, from which to inoculate others.*

6. The expensiveness of the outfit necessary to carry on successfully the propagation of animal virus is so considerable that it is more likely that but few persons will undertake to propagate it, and that the warrant of the genuineness of virus these propagators are able to give is worth something.

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*Dr. Joseph Jones, of New Orleans, by direction of Surgeon-General Moore, of the Confederate States, investigated spurious vaccination, and found that the foul ulcers called vaccination were due, for the most part, to the spurious matter transplanted from one scorbutic soldier to another.

†Animal vaccine is a term applied to vaccine directly from the cow.

7. The proportionately large number of cases of revaccination which take, shows the potency of this virus, as compared with humanized virus of many generations of attenuation.

Having explained how the degeneration of vaccine matter took place in the South during the war, and having pointed out the regeneration of the virus and its restoration to its pristine purity, clearing up all the doubtful points raised in the minds of the people, we will next consider

WHAT IS A SUCCESSFUL VACCINATION?

It is a matter of the utmost importance that there should be some definite meaning attached to the phrase "successful vaccination." Many ask the question anxiously about themselves. We answer, that the best evidence of successful vaccination is *the possession of a good vaccine scar.* This is not absolutely sure but it is the best we have. A vaccine scar from a recent vaccination will be proportionately fresher and more distinct than from a vaccination more remotely done. It should be wheel-shaped, or oval, about the size of a three-cent nickel; it is usually whiter than the surrounding skin; it may be either depressed, with radiating lines, or it may be elevated slightly, except the periphery which is somewhat depressed. The scars from animal virus spoken of above are more sharply cut, larger, with more distict radiations, and, of course, more conspicuous. The old stock of humanized virus gives us a superficial, small, white scar, with slight indentations over it, these indentations answering to the follicles of the skin. Really no vaccination is absolutely certain that has not been put to the test, but it is a good criterion to go by, that a person in the possession of a clear-cut, well formed vaccine scar, will hardly get the small pox in an intense degree, even though the operation may have been done many years previously. With animal virus, we frequently get successful vaccinations in the persons of those having previous good marks, and in cases in which long humanized virus has failed.

It is held in Great Britain and Germany that the number of scars is the best evidence of protection. But this does not hold. For the writer of this has recently seen a German sailor marked by many beautiful and typical vaccine scars, so clean cut that it was possible to get an impression in wax from them, but who yielded a good vaccination from animal vaccine, the interval from the first to the second vaccination being fifteen years.

The theory that the protective influence dies out every seven years has no foundation.

HOW OFTEN SHOULD ONE BE VACCINATED?—The prudent man always takes the benefit of the doubt, and before running the risk of small pox, has recourse again to revaccination. Experience shows that an in-

fant vaccinated at the usual time, from two months to one year old, will require revaccination on arriving at puberty—say from twelve to sixteen years of age. Some will become susceptible before that, but many more will resist all future attempts at revaccination, especially if the primary vaccination was thorough. It is better to be revaccinated on every appearance of an epidemic. There is no greater risk during an epidemic, than at any other time, of having bad results from vaccination. It is best, as a general rule, to vaccinate a child at from two to twelve months, revaccinate at puberty, and then be guided by the character of the scar whether it is further necessary, unless an epidemic approaches; then revaccinate without delay. While it is a fair inference that a person susceptible to vaccination is also unprotected from small-pox as long as vaccination will take, it is not absolutely certain that this is so.

A Primary Vaccination.—It is very necessary that the first vaccination,—the primary vaccination,—should be done with great care. A failure in the first attempt casts doubt on all subsequent operations, and dangerously misleads. We often hear persons declare that they were vaccinated, whereas, when we come to examine their arms we discover that the scar or mark is not as it should be, but still the person is relying upon its protective power because the vaccination was done during infancy, and the tradition about it may be that it was so good that some doctor desired the scab. A primary or first vaccination should be exhibited to the physician who performed the vaccination, during the next six or seven days, for his inspection and approval. If the resulting vaccination is not satisfactory, it should be repeated without delay. So very few infants are really insusceptible, that a failure suggests forcibly that the operation was not thorough, or that the vaccine used was not active.

A Revaccination.—Persons vaccinated for the second or third time, *should be vaccinated with animal virus*, for if humanized vaccine is used, the chances of getting a genuine result are not so good. Revaccinations are done generally in times of alarm, or upon persons about to travel, or upon persons about to join a life insurance society. In either case a good vaccine vesicle will be very desirable, and the operator will get considerable credit for making it "take" well. Successes will be accomplished in far more than half the vaccinations done with animal vaccine.*

The Use of Scabs or Crusts.—It is still very much the custom to use vaccine scabs or crusts taken from the arms of vaccinated persons. This method was introduced by Dr. Bryce, a Scotch physician, and has served a most admirable purpose for half a century. A vaccine scab is composed of dried lymph, pus, epithelium, and some trace of blood. If we give credence to the dangers pointed out by the most eminent surgeons as to the danger of septicæmia or blood-poisoning from the inocu-

*The successes reach nearly 70 per cent.

lation of purulent matter, and consider how many times crusts are used that have been exposed to heat and moisture sufficient to set up partial decomposition, and furthermore remember how many physicians dissolve or make a paste of these crusts and carry them between glass pieces and so put the "matter" in a favorable state for alteration and decomposition, the wonder is that we do not see a great many bad vaccinations from "scabs."

There is certainly a considerable degree of danger from this source, as we have already mentioned in the account of that sort of vaccination during the war, but it would still be by far the best vaccination we could obtain, had not the cultivation of vaccine been reduced to a rational system by Dr. Martin. In the hands of a careful physician, vaccine from one to ten removes from the heifer will give excellent results. It is cheaper; the resulting vesicles are by no means to be despised.

But we surmise that few persons who are well informed about the possible dangers of vaccination from a scab, and the absolute freedom from danger by the use of animal virus, would not greatly prefer the latter when it could be obtained.

We take this occasion to say that a vaccine crust should not be prepared for vaccination in larger quantities than are needed for immediate purpose. That it should never be moistened with saliva, but always with pure water or glycerine. Glycerine has the advantage of being a preservative fluid.

THE USE OF QUILLS OR IVORY SLIPS.—Quills prepared by scraping or boiling, and lancet shaped ivory slips, are smeared with vaccine virus in a thin film, and in this way it is preserved very well for a longer time than when the fluid is collected in glass capillary tubes. In this way the vaccine fluid dies rapidly, and is thus preserved ready for use. The great advantage of the ivory point is that it is shaped in such a way as to be used as a lancet, and is so cheap that it may be thrown away after once using. Its use avoids the risk from using a dirty lancet, and leaves no room for the patient to charge the physician with carelessness if any unusual course follows the vaccination. The ivory slip charged with vaccine directly from the cow is used to complete the entire operation of vaccination, enabling the physician to assure his patient that the pedigree of the vaccine is good, and that the instrument was never before used on any one.

OTHER METHODS.—The old fashion of impregnating threads with vaccine virus, and inserting it under the skin is no longer used, although it may be resorted to if we did not have superior resources.

A method employed by President Thomas Jefferson (see Dr. Martin's excellent historical account of Jefferson as a vaccinator in the January number, 1881, North Carolina Medical Journal) was novel, and may be turned to good use now where animal virus cannot be had. Prepared

crusts or threads or quills were put in a bottle and hermetically sealed, and this bottle placed in a larger one containing water, and the whole tightly corked. We have not spoken of all the devices for the preservation of vaccine, but enough has been said to convince the reader that vaccine virus must be kept with care, in order for it to produce a good result.

HOW TO PREVENT AND EXTERMINATE SMALL POX.

Vaccination in infancy, revaccination at puberty, and where there is not a distinct vaccine scar, revaccination on the importation of small pox into a community, is the well proven plan to prevent small pox. None should be allowed to escape the vigilance of the health officers. The greatest danger in every community is from the more ignorant, and consequently the more prejudiced classes. Compulsory vaccination should be attempted by every town, village and hamlet. It is cheaper to furnish vaccination at a great expense than to allow one case of small pox to get into a community. The city of Wilmington has spent as much as $500 a case for the care of small pox, and during the epidemic of 1865-'66 as much as $12,000 were expended before we were rid of the vile disease. Thorough vaccination, which was then impossible, would have saved it all.

A lesson of the expeditious management of small pox is fresh in the minds of some of us. Last year a sick sailor came into the port of Wilmington, and three days after he was sent to the Seaman's Home Hospital, (on Dock street, in a thickly settled portion of the city) small pox broke out on him. At 11 o'clock the disease was recognized. All the sailors, fourteen in number, in the same ward with him, were vaccinated, and in four hours from the time the disease was recognized, the patient was carefully and comfortably transported four miles down the river to the dismantled pest house, with a nurse and provisions, bedding, furniture and medicine necessary for his comfort. Vaccination was promptly done at the expense of the city, and quietly and without panic or mishap, the disease was stifled in the very outset. No other case occurred.

This lesson in preventive medicine we like to hold up to the people of the State, to show what can be done by quiet, energetic action. This example also serves to answer the question how can small pox be exterminated?

SMALL POX HOSPITALS.—The best plan for the construction of a hospital for the reception of small pox patients is the pavilion plan. Large tents, with flies, furnished with board floors, warmed by small sheet-iron stoves, fulfils the requirements necessary for the successful treatment of these cases. When the cases are ended, all the material

should be destroyed by fire. Small pox patients require well ventilated, cool, airy apartments.

THE DUTIES OF COUNTY SUPERINTENDENTS OF HEALTH ABOUT PUBLIC VACCINATION.—Superintendents of Health are required by law to vaccinate all persons applying free of charge,* and they are also required to revaccinate all persons admitted into jails, poor houses and work houses, if they find it necessary. Unfortunately for this demand of the law, no means are provided for the Superintendent of Health by the State, to purchase vaccine. The modest sum of Two Hundred Dollars was asked for, but the last Legislature did not feel able to provide the State Board of Health with this small sum to meet the emergency that is now upon us. The requisitions therefore that may have been made upon the Secretary of the Board cannot be filled unless accompanied by the cash. The command made by the State law that "the Secretary of the State Board of Health shall keep a supply of fresh animal vaccine virus at his command" has been complied with, but no thanks to the State of North Carolina for his ability to do it.

It will save the Secretary of the Board some trouble and expense, by replying at this place to the numerous enquiries addressed to him for information about where to get vaccine virus.

There are many vaccine farms in the country. Two in Boston, one in Philadelphia, two at Chambersburg, Pa., one at Fond du Lac, Wisconsin, one at St. Louis, Mo., and perhaps others. We have had experience with vaccine from the Pennsylvania Vaccine Company, Chambersburg, Pa., and that of Dr. Martin, of Boston, (27 Dudley street.)†

ONE LAST WORD OF ADVICE ABOUT THE USE OF ANIMAL VACCINE.—The vaccine directly from the heifer is slower in its course than the old humanized virus. Frequently it does not produce a vesicle earlier than the fifth day, and sometimes as late as the seventh, and the crust is not dropped until from the twenty-first to the twenty-fourth day. It will also be observed that there is greater constitutional disturbance, and that (rarely) a general eruption will follow.

The patient should be told that the constitutional symptoms will be more severe than by the old method, and every care should be observed that no injury from pressure of a too tight sleeve, or by abrasion or scratching, as troublesome sores may result.

CAUTION ABOUT THE MANAGEMENT OF THE VACCINATED ARM.

There is good reason to believe that a vaccination that runs its course undisturbed affords the best protection. Vesicles should not be tapped

*The Superintendent of Health would not be expected to furnish virus at his own expense, and it would be a pitifully mean county that would not pay the Superintendent extra for this service, notwithstanding the terms of the law.

† Dr. H. A. Martin & Son sell seven ivory points for $1.00, or fifteen for $2.00.

to furnish vaccine for other persons. The vesicle should be protected by slitting the under sleeve of the shirt, to avoid friction and pressure, and by a loosely fitting sleeve, the vesicle being covered with a cloth greased with suet, cosmoline, or any petroleum jelly, and all covered with a fold of cotton batting. Sometimes it is necessary to treat the sore resulting after the scab drops. A weak solution of white vitriol (sulphate of zinc), five grains to the ounce, applied several times daily, will generally suffice. Itching is generally overcome by freely applying petroleum jelly.

PREVENTIVE MEDICINE.

The most important duty a Board of Health can accomplish is to prevent sickness. For many years it has been known, as well by the people as by the doctors, that the fevers occurring among the vessels in our tide-water streams was preventable, in a marked degree. Observations extending over a space of time marked by four or five generations, demonstrated that the cause of sickness among sailors was due very largely to sleeping on board vessels in the Cape Fear River particularly. This fact was so firmly established in the opinion of merchants in Wilmington, that $20,000 was subscribed to build a home for seamen, in which they might find a safe retreat from the effluvia of the river, and what is not exactly pertinent to the present subject, to escape also the venereal effluvia of low sailor lodgings.

In this building ample provision was made for the accommodation of many more sailors than ever visit the port of Wilmington at one time, and by the Christian benevolence of one of the oldest citizens of that city who had himself been a sea-captain, a house of worship, supplied by the yearly ministrations of a preacher, was provided, to throw around these "toilers of the sea," a beneficient influence.

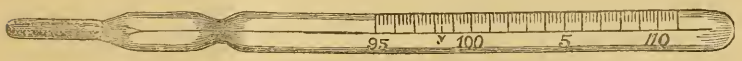
The Board of Health, therefore, issued a pamphlet, entitled "A Guide to Shipmasters Visiting the Cape Fear River," a copy of which is herewith transmitted. It may not be necessary to make the statement, but this is the first example of preventive medicine being founded upon an in-

strument of precision, and is only mentioned in this place that it may suggest the employment of other means of precision in the same service.

Advice to Shipmasters for the Prevention of River Fever—The Fever Thermometer—Its Uses.

The use of the thermometer to indicate the existence of fever is now established beyond doubt. It has been shown by thousands of observations that the heat of the body in any part of the world—in the tropics or the arctic circle—varies very little from 98.4° Fahr., in a grown person, in health. Upon this settled observation is based an estimate of the amount of fever in any given case.

The fever thermometer differs from the ordinary instrument in being self-registering. In the figure a thermometer is shown with the index just below 95°. This index is a slender line of mercury separated from that in the bulb by a slight space, and in a good thermometer the index does not fall back and unite with the mercury in the bulb.



TO READ THE THERMOMETER.—The instrument must be examined and the index must be below the arrow seen at 98.4°. If it is above it can be shaken down, either by holding it firmly between the finger and thumb and shaking forcibly as in flirting the ink out of a pen; or, by taking the instrument at its upper tip, the end opposite the bulb, elevating the hand as high as the head, and, by a smart impulse downwards, thus shake the index below the arrow.

The instrument is put under the tongue, or between the teeth and the cheek, the lips closed upon it, and it is allowed to remain at least three minutes by the watch.

On removing the instrument, an examination of the index will show the temperature, which is indicated at the upper tip of the index, that is, the end of the index the farthest from the bulb.

WHAT A RISE IN TEMPERATURE MEANS.—For the purposes of the instruction intended to be conveyed, it is safe to assume that every degree of heat beyond the arrow is a degree of fever.

The following table will show the relation between the pulse and the temperature of the body:

An increase of temperature of ONE DEGREE above 98° Fahrenheit, corresponds with an increase of TEN beats of the pulse per minute. (*Aitken.*)

Temperature	98°—Pulse	60.
"	99°— "	70.
"	100°— "	80.
"	101°— "	90.
"	102°— "	100.
"	103°— "	110.
"	104°— "	120.
"	105°— "	130.
"	106°— "	140.

The rule above is subject to some variation, but is a fairly good guide.

It is well known that 101° before 11 A. M., indicates an approaching fever, and that the same after 5 o'clock, a declining fever; and so on with every degree above it. 103.5° is about the average of the malarial fever of the rivers. Many severe cases reach 104.5° and 105.5°. Even 106° is not surely fatal, but beyond this, in the most favorable conditions, the danger is very great. 108° to 110° is most surely fatal.

With these introductory remarks we will call the attention of shipmasters to certain precautions, which long experience in this latitude has shown necessary to be observed.

The fever occurring amongst the seamen who visit this and other Southern rivers is malarial. It is due to the exposure of sleeping on board vessels, and keeping late hours at night.

THE NATURE AND COURSE OF RIVER MALARIAL FEVER.—It commences sometimes with a chill. The chill is either a shaking ague, or sometimes the only symptoms are coldness of the fingers, blue nails, cold nose, and ears and toes. Both forms may be an essential part of similar fevers. A chill may last from half an hour to two or three hours, and is always followed by fever. Chill is only a cold stage of fever, and the thermometer will most always show from 100° to 102° even when the chill is highest. The fever comes on, the coldness of the skin gradually goes off, and the heat of fever follows, the temperature rising gradually to 103.5 to 105°.

For instance, if the chill comes on before 11 o'clock A. M., as it often does, the fever will reach its height usually by 5 o'clock P. M., and then gradually decline, either by copious sweating or an abundant discharge of urine. If the fever goes entirely off it is *intermittent.* If it merely declines it is *remittent.* In either case a person seized with fever may look for a return on the succeeding day, or the day after. These are forms of the same fever and have all been named. Thus we have them coming on *daily*, *twice daily*, *every other day*, *every third day*, and so on; but the fevers are essentially the same, being practically cured by the same treatment.

THE WAY TO AVOID RIVER FEVER.—Live temperately, and do not sleep in the river on board vessel during the months of August, September and October. The air of the town is perfectly harmless to most persons, and especially those who go to bed early, and are not intemperate.

Sleeping on board during the months named does not always cause sickness, but it does nearly always. Sometimes fever does not develop until a vessel gets to sea, and then all hands may be taken down at the same time. Such cases are known.

PROPHYLACTIC.—The daily use of quinine or the preparations of peruvian bark, *will prevent fever*. It is a good practice to give to crews of vessels a daily morning dose equal to five grains of quinine. Some of the cheaper preparations of bark answer this purpose very well. None of them are equal to quinquinia, a preparation tested now during several seasons, and found to be remarkably efficient. It contains 15 per cent. of quinia and 45 per cent. of other valuable alkaloids of peruvian bark, which really gives it an advantage over the sulphate of quinine usually sold. It is recommended with great confidence.

WHAT TO DO AFTER THE VESSEL GETS TO SEA.—In every case of complaining on the part of a seaman, the Captain or an intelligent officer should take the man's temperature. If it is more than 98.4° he will be wise to conclude that there is a fever approaching. 100° or 101° is absolute evidence, apart from any other condition of the man, that he has fever, and it is tolerably certain that if it is not checked he will have more the next day.

WHAT TO DO IF THE TEMPERATURE RISES.—No amount of fever should prevent the patient from taking *quinine*, or some other preparation of bark in the proper doses. It is always best to commence quinine early in the morning because the fever increases towards noon, and with the increase of fever comes on many times such a sick stomach that the patient cannot retain the much needed medicine. But if the stomach does not reject it he ought to have his medicine in proper quantities, notwithstanding the fever, for every day of its continuance unaffected by medicine, lessens the chance of recovery.

WHAT MEDICINE TO GIVE.—If the fever is detected early, medicine should be given at once. It is necessary usual to give *twenty grains of quinine* every twenty-four hours. *More* is needed sometimes, but it is not often that a less quantity will succeed. It is best to direct* five grains of *quinine* in pills every two hours, commencing as early as four o'clock in the morning, until twenty grains are given. Should pain in the head and hot skin, and unpleasant "singing" or "roaring" in the ears, trouble the patient, *bromide of potash* should be given in ten grain doses*, dissolved in water, every two or three hours. Usually a very hot

*See formulas on the last page.

and dry skin yields to the action of the remedies above. Should they fail, *fluid extract* of Jaborandi should be given, fifteen drops every hour until copious sweating comes on.

Constipation is sometimes an accompaniment of this fever, and should be relieved by *Calomel and Soda at night, or Epsom Salts and table salt in the morning.*

Relapses are not uncommon, and although the thermometer may not indicate fever after a few days of treatment, (and it is urged that the thermometer should be carefully applied morning and evening,) it is never safe to withdraw the quinine the day following the one on which the patient misses his fever. At least *ten grains* should be continued daily for three or four days in succession.

RECAPITULATION.

1. The thermometer is a sure guide in the early detection of River Fever.
2. Whenever a man shows any indisposition after a stay on the river during the months of August, September and October, apply the fever thermometer, and if he has 100° or over, you may look out for more fever the next day.
3. Quinine should be given in five grain doses until twenty grains are given before noon. No time should be lost.
4. Relapses can be prevented by continuing the medicine four days in succession after the last indications of fever.

Formula 1.—Quinine Pills.

Take of

Quinine, two scruples or forty grains,
Tartaric Acid, ten grains,
Glycerine, twenty to twenty-five drops.

Mix well, and make twelve pills. Roll in magnesia before putting in a box.

One pill every hour until six are taken a day.

2.—Quinine Solution.

Take of

Quinine, forty grains,
Tartaric Acid, thirty grains,
Water, two ounces or four tablespoonsful.

Mix and make a solution.

A teaspoonful every hour until six doses are given each day.

3.—BROMIDE SOLUTION.

Take of

Bromide of Potassium, one ounce,
Sugar, two tablespoonsful,
Water, eight tablespoonsful.

Dissolve the bromide in the water and add the sugar until all is dissolved.

The dose for headache, and for the excitement caused by quinine, is a teaspoonful every two hours.

A little lemon juice or hydrobromic acid makes the solution pleasanter to take.

4.—QUINQUINIA SOLUTION.

Prophylactic.

Take of

Quinquinia, one ounce,
Tartaric Acid, half an ounce,
Water, three pints.

Mix and make a solution.

Dose, a tablespoonful every morning.

5.—QUINQUINIA SOLUTION FOR FEVER.

Make as in the solution of quinine and in the same quantities.

6.—QUINQUINIA PILLS.

Make the same as quinine pills and in the same quantities and doses.

7.—CALOMEL AND SODA.

Purgative.

Take of

Calomel, six grains,
Bicarbonate Soda, twenty grains.

Make a powder and mix in a spoon with syrup.

8.—EPSOM SALTS AND TABLE SALT.

Purgative.

Take of

Epsom Salts, one-half to one ounce,
Table Salt, one teasponful.

Mix and make a solution in a cup of water. To be taken before breakfast.

DISPOSAL OF GARBAGE.

Another subject of importance to the well-being of cities and towns in this and all other States, is what to do with the garbage that is daily accumulating, and which, if not removed, is unsightly and offensive, and which finally causes disease. Public officials preside over our towns generally just long enough to learn the state of the finances, but seldom long enough to make any sort of sanitary study a business. In times of emergent trouble they appeal nervously to Boards of Health to do something effectual and instantly; but as soon as the passing trouble is over, they forget the duty of informing themselves on sanitary matters. A municipal officer who persistently and conscientiously studies all that is known of the sanitary work of cities, and who makes the performance of sanitary functions a steady matter of business, is a rare functionary. Few of them know that there is a published system of garbage removal applicable to the needs of towns, small and great. Still there is such information to be had, and the North Carolina Board deemed it a duty to circulate information, reiterating much that is known, and pointing out much that is new, on the subject of the disposal of garbage. If there is a town in the State that has any good system, it has not come to the knowledge of the Board of Health. A copy of our pamphlet is appended for the information of all concerned. (All of these pamphlets may be had for the use of corporations free of charge, and in any desired numbers.)

THE DISPOSAL OF GARBAGE.*

The word garbage as used in this communication, means *house offal, ashes and dry house dirt, street sweepings, the contents of privy vaults and*

*The substance of a paper read before the New Hanover County Board of Health in May, 1881.

cess-pools, *dead animals*, and all refuse which by accumulating is unsightly or noisome.

The disposal of garbage has received too little attention in most of our towns. The construction of sewers has developed some high skill in engineering, while the disposal of garbage is left to the street cleaner to do the best he can with the means provided him. It cannot be doubted, though, that the prompt and careful removal of garbage is a prime necessity in the conservation of the public health, or that its neglect or slovenly performance gives a bad reputation to a city, which is of course a damage to its commercial interests. We have an illustration of this in the recent demonstration in New York of the citizens of all classes, coming together in a public meeting to demand that the Street Commissioners should be held up to their duty in keeping the streets clean. Neglect of ordinary cleanliness of the streets, in the opinion of physicians and others, was a fruitful source of the increased sickness and mortality in the neglected quarters of the city. It is hardly necessary in this place to argue the necessity of the disposal of garbage.

In a very excellent article in the *Sanitarian* for July, 1881, Dr. O. W. Wight, the veteran sanitarian of Milwaukee, speaks thus forcibly of the accumulation of human excreta:

"The privy vault should not be tolerated in any civilized neighborhood. Where there is no sewer system some form of earth closet ought to be used, and the contents frequently removed. The liquid portion of the excreta of horses and other domestic animals should be constantly removed by the sewer system. The solid portion should not be thrown upon the ground and bleached by the rain, but be kept under cover, dry, and frequently carted away. In fact, no organic matter should be thrown on the ground, nor deposited in the ground near human habitations. The soil where man dwells is sacred, and it is sanitary sacrilege to pollute it. He who fouls the air that he breathes himself, or the water that he drinks, or the food that he eats, is a barbarian who might learn wisdom from the cat, or decency from any swine not demoralized by contact with man. He who fouls the air that another must breathe, or the water that another must drink, or the food that another must eat, is a criminal, to be classed with those who maim and kill.

"There are more reasons for such care in the removal of organic wastes from inhabited places than appear on the surface. The chemistry and hygiene of putrefaction are complex, involving many practical considerations. Wherever there is a collection of putrefying organic matter, whether on the ground, in the ground, within a faulty sewer, or under a habitation, there is a tireless foe to health and life. Not only are putrescent collections of garbage, decaying vegetables, manure, offal and human excreta harmful in themselves by reason of exhalations poisoning the air and leeching liquids polluting the earth; they are also depositories and multipliers of disease germs. Such collections may not

produce infectious diseases *de novo*, but they lessen the vitality of people living in the neighborhood, and thereby lessen the power of resisting epidemics. It is a well known pathological fact that nature struggles to eliminate disease by excretory processes. Accumulations of filth containing excreta may, therefore, harbor seeds of various communicable maladies. Sewer-gas, while it may not beget scarlatina, diphtheria, small-pox and other contagious diseases, easily becomes the vehicle of conveying them through obscure and intricate channels. Nor is this all. It is well known that a dung-heap will take cholera, hold it for an indefinite period, and convey it to human beings; that is, cholera dejecta thrown upon a dung-heap will plant in it the germs of the disease, there to take root and multiply, and may communicate themselves to man under favoring circumstances. A privy vault will take typhoid fever, have it badly for a long time, and communicate the disease to human beings. It is probable that a heap of putrescent garbage may catch diphtheria in the same way, multiply its germs and communicate them to unsuspecting children. There is little doubt that every seething mass of organic matter is affected with yellow fever in the midst of an epidemic of that disease. It is believed by many experienced physicians that yellow fever is not communicated from person to person, but is always caught from surrounding objects.

"So great is the influence of filth in these various ways that no epidemic can make any serious headway in the midst of cleanliness. One frequented privy vault, down with typhoid fever, is more dangerous than a house full of human patients. A big trunk full of dirty clothes, sick with yellow fever, is more to be shunned than a small hospital full of human victims of the disease. A village dung-hill, planted with cholera, is more perilous than a dozen cholera corpses. A foul sewer, swarming with scarlatina germs, may be more dangerous to a neighborhood than an infected school-house."

The management of *household offal* will be first treated. This may be considered under three classes, viz: 1. The fragments of food, scraps, kitchen grease, moist solids or liquids known as *swill*. 2. Ashes, dry house and yard sweepings. 3. Night soil. In every well-managed household the first two should be kept in separate receptacles for convenient and economical disposal. The receptacle for swill should be a covered half-barrel, a pork barrel or any other water tight vessel. The receptacle for ashes should be in a place sufficiently removed from the dwelling or out-houses to avoid the chances of fire from carelessness of servants. The swill should be removed twice a week at least, and in the case of hotels, boarding houses or large families it should be done daily. The dry garbage, all denoted under the general term *ashes*, should be removed weekly from dwellings, and also from stores and factories.

Before we come to the difficult question of the removal of garbage, we

will speak of the manner in which it should be cared for up to the time the garbage cart calls for it. No sweepings should be allowed to be thrown loosely into the streets, either from stores, houses or factories. Householders and proprietors should be required to keep their trash and ashes in boxes or barrels, as before mentioned. To allow violations of this simple rule, would be to abandon our streets at once, as they are now, to all sorts of litter. The indiscriminate deposit of dry trash now, in the streets, costs the corporation about one-third of the time of the street hands in sweeping it together into piles; and because of insufficient force to carry it off or from negligence, the same piles are scattered to be again swept together or oftentimes allowed to remain and rot. This state of things would be bad enough if the dry trash alone was thrown into the streets. It is not infrequently the case that some dead domestic animal, or the entrails of fish and fowls are seen in the middle of the streets, offending the eye and disgusting the nose. The plan proposed therefore for the prompt removal of garbage, we suggest as follows:

The city should be divided into six sections, representing the six work days of the week. This division should be accomplished with due reference to the density of the population in the different quarters of the city. Printed rules should be distributed giving the outlines of the sections, and notifying every householder, that on a certain day of the week, regularly, their ash barrels and swill tubs would be taken away free of charge, but on no other days. The carts should visit every section in pairs—the one taking the *ashes*, &c., the other taking the swill. The household receptacles should be emptied and left. A suitable penalty for neglect of the regulations ought to be ordained after sufficient notification.

There need be no particular model for a cart for ashes, but for *swill* there is a barrel constructed by the Eagle Odorless Apparatus Company, 12 Pemberton Square, Boston, four of which could be placed on a cart.

Serious and careful attention should be paid to the selection of a dumping ground. For years it has been noticed that the sweepings and even disgusting offal have been removed from the thickly settled portion of the city, and dumped in huge piles around the suburbs. Not unfrequently helpless families on the outskirts have been made sick by the pestilential emanations which have been carried by the prevailing winds into their humble homes.

It is plain that this is grossly wrong and extravagant. Wrong, because the helpless petty tax-payer having no influential voice to abate the nuisance for him, is taken sick, and either suffers in consequence of being insufficiently cared for, or falls to the charge of the city, *consuming medicines, the cost of which should have been spent in preventing his sickness by making the surroundings of his home healthful;* extravagant for

the reason above given, and also because the material which when wrongly disposed of engenders disease, if properly used upon a farm or garden would fertilize and improve it. But this is not the worst of it.

Garbage is used to fill in lots, and mend washed places in the streets. This suicidal action has been repeated again and again in our towns, until the lessons of hygiene and common sense have only taken possession of managers of some corporations, after pestilential disaster has brought it home.

The deposit of hundreds of loads of ashes, cabbage stalks, packing-straw, moulded vegetables, dead cats, and mingled kitchen refuse, does not strike one as being a wise sanitary proceeding for the present or for the future of streets or lots, but still all that portion of our city from about 10th street to 15th street, is largely upon a similar foundation, and notably in this part of our city, there has been, at certain seasons, a large amount of sickness, a part of which certainly had its origin in the emanations from these sources.

Now in the case of this city there is no reasonable excuse for the improper disposition of garbage. With a river front of two miles, we ought to be able to dispose of the daily accumulations which would not exceed thirty or forty cart loads, by means of scows, as is done in New Orleans. A dumping ground could easily be selected on the river at a safe distance from the city, one above and one below the city, in order to take advantage of the tides, at such points as directed by the Commissioners of Navigation.

If properly managed, arrangements might be made with farmers to take away *all the* garbage, including night soil, at a small cost. In some cities there is a competition between gardners to secure this garbage for their use at their own cost.

Swill is disposed of in Boston, and other cities, where a plan similar to the one we have outlined is adopted, to persons who use it to feed hogs, the city realizing thereby one-half of the total cost of collecting it.

We now come to a more difficult branch of our subject,—the disposal of night soil.

It is evident, to every citizen who observes, that our privy arrangements are abominable. A few years ago, through the courtesy of my friend, the late Dr. Wright, who was then City Physician, I got a statement as to the condition and location of our privies, which by the way is a correct procedure in the thorough estimation of the scope and character of the evil to be dealt with.

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Is there any remedy for this state of things? I answer yes! There could easily be an improved condition of the privies at a cost so small that any one owning a house, however poor, could afford to adopt it. But our case must be to remedy the evils as they are. The majority of privies have sinks. From time to time these sinks or vaults are emptied,

to the intense disgust of the neighborhood where it is done. In some cases it is accomplished by excavating the privy contents and depositing them in a pit on the premises. In other cases carts are loaded up and are driven through the streets, creating a horrid stench in their tracks. Now this can be remedied by adopting one of the many odorless plans. The Eagle Odorless Apparatus is the best excavating machine in use. A description of this apparatus can be had on application by letter at 12 Pemberton Square, Boston.

The necessary machinery costs about $600. It could be easily paid for by fees arising from the service of it. A committee could easily enquire into the practicability of it. I would suggest that it be purchased by the corporation and rented to reliable persons. The inducement would be to the person renting it that he could make it profitable by fees collected, and by the disposal of the night soil as a fertilizer. These are all practical questions, and as sanitarians we must look them square in the face. The air of this town reeks with the dense stinks from its hundreds of privies nightly, from August to October especially, and it could be made pure and sweet by the proper effort.

There are privies other than those spoken of, and for their remedy it would be necessary to send a cart with lime and copperas from door to door to disinfect them.

I have selected this subject for your consideration to-night, because it has given us all, at one time or other, much concern. It is not a pleasant thing to talk about, but its bearing upon the health of this community is material. We cannot assume the sanitary responsibility of our people without taking the lead in works of reform. I trust the city will take the matter in hand at an early day, so that a system may be thoroughly organized before the hot weather is fairly upon us.

The foregoing paper was presented to the New Hanover County Board of Health, and by resolution it was submitted to the Mayor and Board of Aldermen of the city of Wilmington for their consideration.

It must not be wrongly inferred that because the first effort to systematize the disposal of garbage began in Wilmington, that it is most needed there. There is hardly a community in the State to which the general principles here laid down do not apply. The smaller towns are sometimes the most neglected.

A sanitary survey of a town, if carefully and conscientiously conducted, would astonish those who have heretofore considered their town a clean one, and this applies to most of our towns and cities. It will be useless to expect any improvement in those communities not convinced of their uncleanliness. The authorities in towns and cities move very slowly in the direction of improvements, and when they do, it is to follow obsolete plans. It has been common in many places, indeed it is now common, when the very best has been done in the way of cleaning

streets and alleys, for the result to be only a make-ready-for-inspection attempt, with all the clean things in sight, and the harmful, dangerous things merely hid away and covered over with di-infectants. Disinfectants are made to displace the cleansing processes, and many people are lulled into a false security. Not only so, but being satisfied with a work well done, all efforts subside until the work can be no longer put off, and then is repeated the same perfunctory attempts at cleansing.

It is just this state of things that in New Orleans gave birth to that most useful body, known all over this great country for their faithful sanitary work, the New Orleans Auxiliary Sanitary Association. The example of New Orleans might be followed with profit in every city. The aid possible to be rendered to cities in the interests of cleanliness is very great by similar organizations. It is possible for auxiliary sanitary associations to work harmoniously with the regular health boards without any jarring, and the amount of emulation excited by the two bodies working earnestly to carry out the same thing, can be readily conceived.

If, therefore, the citizens of towns, villages and cities will show that they are awake to the necessities of a thorough sanitary police, by taking the initiative first on their own premises, and then in the streets nearest them, the needed reform cannot be long delayed.

It will interest many householders doubtless to know of all the plans for the disposal of garbage. One of the very best methods is to burn it. The following account is taken from the *Manufacturer and Builder:*

HOW TO DISPOSE OF KITCHEN GARBAGE.—The disposal of kitchen garbage is one of the standing annoyances to the cleanly house-keeper. In the country, or in the suburbs of our cities and towns, where the pig-pen is conveniently at hand, no trouble is experienced in ridding the premises of this form of refuse; but in the cities and towns the best regulated efforts for the removal are but indifferently successful, and in the summer season especially, when the attempt is made to save it, it speedily undergoes decomposition and becomes a putrid, offensive and unwholesome nuisance, an abomination to the nostrils, and a menace to the health of those who are forced to inhale its disgusting emanations. To avoid this constant and often intolerable nuisance, many intelligent house-keepers adopt the sensible course of burning it in the kitchen range as fast as it accumulates. Where this is done properly the method is effective and inoffensive, the gases and vapors evolved during the burning of the refuse being carried off with the other combustion products by the chimney, harmless and unperceived. There are some practical objections, however, to the plan of burning the refuse of the kitchen directly in contact with the fire, which are due chiefly to the fact that the stuff, composed largely of the parings and other rejected portions of vegetables, bones and other animal refuse, is largely charged with moisture. This water must first be driven off before the refuse will commence to burn, and this takes considerable time, or demands that the garbage shall be thrown in small quantities at time, which implies personal care and attention to the operation. The proper way to effect the burning of kitchen garbage, is manifestly first to thoroughly desicate it and to throw the dried material into the fire where it will be immediately consumed.

A very practical and excellent household apparatus for disposing of kitchen garbage upon this plan consists of a pail for the reception of the garbage, provided with a set of perforations, and with a dumping bottom which can be closed to hold the charge or opened to dump it when dried, by turning the crank on the side. This garbage pail is suspended within an outer cylinder having a circular opening in its base, so that it may fit over one of the openings of the range, and a close cover whose edge dips into a water-seal. To use this apparatus, it is placed over one of the openings of the range. The dumping bottom of the pail is closed by raising the crank and putting the ring over the handle, the garbage is emptied into the pail, the water-seal filled, and the cover put on. After half an hour or so, more or less, according to the nature and quantity of the garbage and the heat of the range, the contents of the pail will be found to be thoroughly dried, and may be dumped into the fire and burned by releasing the crank handle from the ring. During the drying of the charge all the disengaged vapors are either condensed in the water-seal, or dissipated with the vapor from the evaporating pan. By the peculiar construction of the apparatus, the contents of the pail are hermetically sealed within it, and none of the vapors find their way out of it; consequently no unpleasant odors are given off during the operation. The desicated garbage is immediately burned as it is dumped into the fire, and the whole operation is effected simply, expeditiously and with no disagreeable accompaniments.

The method and apparatus here described is worthy of the highest recommendation, not only because of its convenience and cleanliness, but also on the much more important ground of sanitary considerations. No intelligent housekeeper requires to be told that the foul emanations from the putrefying garbage receptacles, which no amount of cleansing will suffice to keep clean, are in addition to their extreme offensiveness, also in the highest degree unwholesome, in that they can become the carrier of the germs of pestilential fevers, which are most insidious in their approach and very frequently fatal in their results. To unwholesome influences of this kind the children of the household, by reason of their superior sensitiveness, and women, for the reason of their domestic habits, keep them constantly exposed to their effects, are especially susceptible. We highly approve of the method and apparatus here described for disposing of kitchen garbage, as affording a simple, efficient and expeditious means of doing away with an offensive and unwholesome domestic nuisance.

The apparatus is manufactured and for sale at Myers' Sanitary Depot, 91 Beekman street, New York.

Directions for Use.—Set the burners on the range, close damper by raising crank and putting ring over handle, put garbage in pail, fill the water-seal and put on the lid. After half an hour or so, according to the nature of the garbage and the amount of heat, the contents will be dried and may be dumped into the fire and burned by releasing the crank handle from the ring. Meanwhile all vapors have been condensed in the water-seal and dissipated with the water in the evaporating pan, no odor escaping.

On a larger scale the garbage of the city of New York is to be disposed of by burning in a Storer's Garbage Cremating Furnace. We get our information from the *Scientific American* of July 2d, 1881. About 750,000 tons of garbage were collected there the last year. This mass now burned to ashes in the furnace will yield a large amount of ashes, suitable for filling streets and lots.

The "furnace consists of a brick-lined cylinder, 60 feet long or thereabouts, and six feet in diameter, set at an inclination of about half an

inch to the foot, on anti-friction rollers, and revolved by worm and wheel. At the feed end of the cylinder is a small fire-place that is used only for the ignition of the pulverized fuel, which is the principal agent in this work, and for which the inventor of this furnace holds the only United States patents. At the delivery end of the cylinder is shown a receiving chamber or pit (the parts being broken away for this purpose), into which the dried material falls, and whence it is continuously removed by a bucket elevator.

Just beyond this pit, in the base of the smoke stack, is the gas mingling and combustion chamber, in which the escaping steam and gases are decomposed and thereby rendered inoffensive.

The operation of the furnace is as follows: The fire is urged in the first fire place until the latter is hot enough to instantly ignite the pulverized coal which is injected through it by the pulverizer or fan. The jet of burning pulverized coal entering the cylinder quickly heats it throughout to a white heat. At the same time the fire on the grate in the gas combustion chamber has brought the walls and perforated dome thereof to a white heat.

The cylinder is then put in motion at the rate of from two to ten revolutions per minute, and the garbage and ashes, separately or together, are dumped into it from the carts.

The material, as it passes through the cylinder, is exposed to the direct contact of the intense flame and to the direct radiation from the hot brick lining of the cylinder for as long a period as may be desired, this depending upon the speed of the cylinder.

At a speed of about five revolutions a minute the furnace will dry the garbage to the best condition for a fertilizer, while at a speed of two revolutions a minute for the furnace the garbage will be reduced to ashes. The speed is regulated at will by the use of cone pulleys on the counter-shafts.

The enormous volume of steam and gases generated in the process move forward into the gas combustion chamber, and are there decomposed and burned, the perforated dome retaining them sufficiently long for this purpose.

There escapes then through the dome an intense white flame of sufficient volume to generate steam for all the purposes of the work; not the slightest offensive odor escaping.

A drip pipe discharges a constant spray of water on the cylinder to prevent the expansion thereof, so that the brick lining shall not become loose.

The smokestack is constructed of brick above the gas consuming chamber; this construction is preferable for furnaces erected on land; but for those on barges an iron stack is better.

One cylinder, 60 feet long and 6 feet in diameter, will reduce to ashes

each day the daily production of garbage in New York, or over 250 loads per diem, and the cost of it, complete with all its auxiliary parts and the engine to run it, will not exceed $12,000.

THE VALUE OF NIGHT-SOIL.

From a German work, on "The Employment of Human Excreta and Animal Remains in Agriculture," by Wilhelm Hahn, we extract the following statement of the value to the farmer of a manure that is now almost entirely wasted in every part of our country. According to these tables, the human excrement of our population of 40,000,000 is equal, in respect to its nitrogen, to *one hundred millions tons of cattle-dung*. This is a statement that needs no comment. We recommend it to the careful consideration of all who care for the problems of national prosperity.

Inquiry has shown that a grown person produces daily 2 lbs. of fæces, of which 1½ lbs. is fluid and ½ lb. solid.

In every 100 lbs. of urine there are 4 5-6 lbs. nitrogenous matter, in the proportion of 100; 46¾; so that in 100 lbs. of urine we have about 2¼ lbs. nitrogen.

In 100 lbs. of solid fæces we have 4 1-10 lbs. nitrogen, so that in the yearly product of a grown person (547 lbs. fluid and 183 lbs. solid fæces) we have:

In the fluid.....12½ lbs. nitrogen.
" solid..... 7½ " "

Or.....19 5-6 lbs. nitrogen per annum.

Or in 100 lbs. of the mixed fæces we have 2¾ lbs. nitrogen.

So that, in respect to nitrogen, 100 lbs. mixed human fæces are equal to:

417¾ lbs. horse-dung. 753⅓ lbs. cattle-dung.
445 1-5 lbs. pig-dung. 298½ lbs. sheep-dung.

As compared with the best guano, which contains 13 per cent. of nitrogen, the yearly product of a grown person would equal 1½ cwt. of the latter, as regards nitrogen, or 100 lbs. of mixed fæces would equal 34½ lbs. of best guano.

In respect to alkalies, 100 lbs. human fæces equal:

109 lbs. horse-dung. 111 lbs. cow-dung.
112 lbs. pig-dung. 51 lbs. sheep-dung.

In respect to phosphates, 100 lbs. human fæces equal:

208 lbs. horse-dung. 415 lbs. cow-dung.
208 lbs. pig-dung. 124 lbs. sheep-dung.

In comparing human fæces with that of animals, it would be well to take into consideration the fact that quantities of straw, &c., are mixed therewith. A comparison of human fæces with stable-manure will show that 100 lbs. of the former are equal in respect to nitrogen to:

550 lbs. horse-stable manure. 753 lbs. cow-stable manure.
560 lbs. pig " 400 lbs. sheep "

In respect to alkalies, to:

135 lbs. horse-stable manure. 140 lbs. cow-stable manure.
142 lbs. pig " 75 lbs. sheep "

Or, in respect to phosphoric acid, to:

320 lbs. horse-stable manure. 500 lbs. cow-stable manure.
330 lbs. pig " 250 lbs. sheep "

As the best guano contains about 12 per cent. alkali salts, and an equal quantity of phosphoric acid, 100 lbs. mixed fæces will equal 8 lbs. guano in respect to alkalies, and 5⅔ lbs. in respect to phosphoric acid.

"If," says Professor Liebig, "we admit that the liquid and solid excrements of man amount on an average to 1½ lb. daily (5-4 lb. of urine and ¼ lb. fæces). and that both together contain 3 per cent. of nitrogen, then in one year they will amount to 547 lbs., which contains 16 41-100 lbs. of nitrogen,—a quantity sufficient to yield the nitrogen of 800 lbs. of wheat, rye, oats, or of 900 lbs. of barley." (*Boussingault's Analysis.*) "This much more than is necessary to add to an acre of land in order to obtain, with the assistance of the nitrogen absorbed from the atmosphere, the richest possible crop every year. Every town and farm might thus supply itself with the manure, which, besides containing the most nitrogen, contains also the most phosphates; and, if rotation of the crops were adopted, they would be most abundant."

"Night-soil," says Gregory, the successful seedsman and farmer of Marblehead, Mass., "used in compost with muck or soil, stable-manure, sea-manure, &c., is good for *all* crops."

Joseph Harris, in his valuable "Talks on Manures," says, "The composition of human excrements, as compared with the mean composition of the excrements from horses, cows, sheep, and swine, so far as the nitrogen, phosphoric acid, and potash are concerned, is as follows:

Table showing the Amount of Nitrogen, Phosphoric Acid, and Potash in One Ton of Fresh Human Excrements, and in One Ton of Fresh Excrements from Horses, Cows, Sheep, and Swine.

ONE TON. (2,000 lbs.)	SOLIDS.			URINE.		
	Nitrogen.	Phosphoric Acid.	Potash	Nitrogen.	Phosphoric Acid.	Potash
Human.....	20.0 lbs.	21.8 lbs.	5.0 lbs.	12.0 lbs.	3.7 lbs.	4.0 lbs.
Mean of Horse, Cow, Sheep, and Swine.....	9.4 lbs.	6.2 lbs.	4.3 lbs.	22.5 lbs.	0.4 lbs.	25.4 lbs.

"One ton of fresh fæces contains more than twice as much nitrogen, and more than three times as much phosphoric acid, as a ton of fresh-mixed animal dung. The nitrogen, too, is probably in a more available condition than that in common barnyard-dung; and we should not be far wrong in estimating 1 ton of fæces equal to 2½ tons of ordinary dung, or about equal in value to carefully preserved manure from liberally-fed sheep, swine, and fattening cattle. . . . It has been ascertained by Lawes and Gilbert that the amount of matter voided by an adult male in the course of a year is: fæces, 95 lbs.; urine, 1,049; totally liquid and solid excrements in the pure state, 1,144 lbs. These contain:

"Dry substance.—Fæces, 23.75 lbs.; urine, 34.50 lbs.; total, 58.25 lbs.

"Mineral matter.—Fæces, 2.50 lbs.; urine, 12 lbs.; total, 14.50 lbs.

"Carbon.—Fæces, 10 lbs.; urine, 12 lbs.; total, 22 lbs.

"Nitrogen—Fæces, 1.2 lbs.; urine, 10.8 lbs.; total, 12 lbs.

"Phosphoric acid.—Fæces, 0.7 lbs.; urine, 1.93 lbs.; total, 2.63 lbs.

"Potash—Fæces, 0.24 lbs.; urine, 2.01 lbs.; total, 2.25 lbs.

"The amount of potash is given by Professor E. Wolff, not by Lawes and Gilbert.

"The mixed solid and liquid excrements, in the condition they leave the body, contain about 95 per cent. of water. It would require, therefore, 20 tons of

fresh-mixed excrements to make a ton of *dry* night-soil, or the entire amount voided by a mixed family of forty-three persons in a year.

"100 lbs. of fresh fæces contain 75 lbs. of water and 25 lbs. of dry substance.

"100 lbs. of fresh urine contain in 96.50 lbs. of water and 3.50 lbs. of dry substance.

"100 lbs. of dry substance of the fæces contain 5 lbs. of nitrogen and 5.50 lbs. of phosphates.

"100 lbs. of the dry substance of the urine contain 27 lbs. of nitrogen and 10.75 lbs. of phosphates.

"These figures are from Lawes and Gilbert, and may be taken as representing the composition of excrements from moderately well fed persons.

"According to Wolff, a ton of fresh human urine contains 12 lbs. of nitrogen; according to Lawes and Gilbert, 18 lbs.

"The value of a ton of fresh fæces on the land is $1.03."—*Pamphlet of Ames Eagle Odorless Company.*

WATER SUPPLY FOR TOWNS AND CITIES.

The first work in elementary hygienics, and the most important work that can occupy the attention of sanitary managers anywhere, is the supply of water. This work was inaugurated by the Board of Health early after its organization, and since then has been of the foremost importance.

Among the facilities granted to us by our niggardly law was to permit the analyses of drinking water for the information of the people. The Board used all its means for some time to increase the facilities thus offered, and the result was an extensive enquiry as to the condition of drinking water on the part of citizens. From many parts of the State analyses have been published.

In our first Biennial Report these analyses were published in detail, and they continue to attract the interest of the people everywhere. Especially was the work done thoroughly in Wilmington. Professor Kerr had made analyses, previous to the organization of the Board, of water from the various streams about the city, and of the Cape Fear River at several points. At irregular intervals after that the water of these streams was made a matter of study, and the results published in the daily papers for the information of the people. So thorough was the conviction that the water of most wells was unfit for domestic use, that in 1881 a company was

organized to supply the city with water fit for domestic purposes.

Work was commenced in 1881, the pipes being laid in all the principal streets, until the approach of warm weather, according to municipal ordinances, put an end to the ditching.

At this point in the history of the company it was not announced to the public what source of supply would be selected. The question was discussed by the New Hanover County Board of Health, at the suggestion of the Mayor (who was President of the Board of Health), as soon as it was made known what would probably be the source of the supply. It was on April 27, 1881, many months preceding the tender of the water by the company to the city, that the New Hanover County Board of Health declared that the water of the northeast branch of the Cape Fear River, near Wilmington, was not fit for domestic purposes.

The determination of the source of water was finally submitted to the New Hanover County Board of Health on January 19, 1882, and two meetings were held for the special purposes of discussing the merits of the water of the northeast branch.

The analyses submitted were made by three different chemists, viz: Professor W. R. Nichols, of Boston, Drs. Ledoux and Dabney, of the Agricultural Experiment Station.

Professor Nichols' analyses were favorable, but were qualified with the assertion that in order to pronounce upon the fitness of water for domestic purposes, the surroundings as to present and prospective contamination must be ascertained. In the words of Professor Nichols: "Permit me to say that as far as I express an opinion, it is with some reservation, for while the chemical examination *assists* in indicating the character of a water, it only *assists*. The questions of the surroundings and of liability to pollution

are of even greater importance, and on these points I am not informed."

EXAMINATION OF VARIOUS SURFACE WATERS.

No.	Date.	Locality.	Results expressed in parts in 100,000.					
			Unfiltered Water.	Unfiltered Water.	Solid Red'e			
			Ammonia	Albuminoid Ammonia.	Inorganic.	Organic and Volatile.	Total at 212F.	Chlorine.
A	Dec 1880.	Wilmington	0.004	0.013	4.84	2.34	7.18	0.53
B	Dec. 1880.	Wilmington	0.008	0.013	3.56	1.62	5.18	0.60
July.	Dec. 1876.	Springfield, Mass Average of 45 Samples.	0.017	0.052	2.09	2.86	4.95	
	June 1877	Plymouth, Mass.	0.008	0.017	1.60	1.40	3.00	
	July 1876 to June 1877	Boston, Mass.						
		Largest	0.006	0.018			5.58	
		Smallest	0.001	0.010			3.72	
	July 1880	Lynn, Mass.	0.006	0 016	2.88	0.80	3.68	0.39

The following is Prof. Nichols' Analyses of two specimens, sent at two different times. They were from the N. E. Cape Fear and a Mill Pond:

In Solution.	Results Expressed.			
	As so many parts by weight in 100,000 parts weight of the water.		As so many grains to the United States gallon of 231 cubic inches.	
	"A."	"B."	"A."	"B."
Ammonia	0.004	0.008	0.002	0.005
Albuminoid Ammonia	0.013	0.013	0.008	0.008
Chlorine	0.53	0.60	0.31	0.35
Inorganic Matter	4.84	3.56	2.82	2.08
Organic and Volatile Matter	2.34	1.62	1.36	0.94
Total dissolved solids	7.18	5.18	4.18	3.02
In Suspension.				
Inorganic Matter	.....	0.054	.....	0.031
Organic and Volatile Matter	.....	0.071	.....	0.041
Total Substances	.....	0.125	.....	0.072
Total Suspension	.....	.....	.....	.....

Each gave a faint test for nitrates when the sulphate of iron test was applied to the unconcentrated water.

The analyses performed by Dr. Dabney of specimens taken at the same time, did not vary from those made by Prof. Nichols in any material points. Subsequently during the long continued drought of 1881, analyses were made by Dr. Dabney with the following results:

THE N. C. AGRICULTURAL EXPERIMENT STATION,
Raleigh, N. C., September 27, 1881.

Analysis No. 1367.

SIR: The sample of water sent to the Station for analysis, and marked "From N. E. Cape Fear, drawn two days before termination of long drought," contains:

Total solids in solution	27.40 grs. per gallon.
Chlorine	10.25 " " "
Free Ammonia	0.04 parts per million.
Albuminoid Ammonia	0.23 " " "

NOTE.—Water of a greenish black color, with some matter in suspension. A strong odor of sulphuretted hydrogen. Chlorine and Albuminoid Ammonia too high.

Your obedient servant,

CHAS. W. DABNEY, JR,
Director.

To DR. THOS. F. WOOD,
Secretary State Board of Health, Wilmington, N. C.

THE N. C. AGRICULTURAL EXPERIMENT STATION,
Raleigh, N. C., November 25, 1881.

Analysis No. 1411.

SIR: The sample of water sent to the Station for analysis, and marked "From N. E. River, wharf of Water Works, near Hilton Bridge," October 29th, 1881, contains:

Total solids in solution	145.30 grs. per gallon.
Chlorine	64.82 " " "
Free Ammonia	0.26 parts per million.
Albuminoid Ammonia	.25 " " "

NOTE.—Yellowish color, some suspended matter, slight odor of sulphuretted Hydrogen. Chlorine and Albuminoid Ammonia too high.

Your obedient servant,

CHAS. W. DABNEY, JR.,
Director.

To DR. THOS. F. WOOD,
Secretary State Board of Health, Wilmington, N. C.

No analyses were presented from Professor Nichols at a date subsequent to the one given above. Therefore the Board had for its guidance only this meagre chemical record.

The *history of the water* was first discussed. 1. As to the present and prospective sewage contamination. 2. As to the occasional influx of salt water. 3. The experience of ship-masters and mill owners and others using the water, as to the effect on the health of employés.

The *chemical analysis* of the water was next considered. 1. As to sewage contamination. 2. Pollution by the cemeteries located on the banks of its tributary, Smith's Creek. 3 Pollution by the slaughter-houses located on or near Smith's Creek.

A careful consideration elicited the history of the bad effects of drinking water upon mill hands and others at one period of its history. The sewage now being emptied into the stream along the river front, and the prospect of the large increase of water-closets after water is supplied, and the consequent great increase of sewage. All this from the west side of the city. On the east side of the city, the natural drainage being into a canal emptying into Burnt Mill Creek and Smith's Creek, and finally the northeast branch of the Cape Fear. The brackish condition of the water many seasons, as evidenced by the presence of crabs as high up the river as the Navassa Guano Works.

The chemical analyses were not considered by the Board as sufficiently numerous to found an opinion upon that exclusively. While the presence of nitrogenous matter was not very great, it was higher than the received standard, and that the amount of solid constituents was by far too great. After a careful consultation the following resolution was passed:

"*Resolved*, That in the opinion of this Board the water from the North East branch of the Cape Fear River, as at present tendered to the city by the Clarendon Water-Works Company, is not suited or fit for domestic use, according to the evidence presented."

The action of the New Hanover Board of Health was reported to the Board of Aldermen, in connection with other matter, and the water was formally received, entirely ignoring the opinion of the Board of Health as to the merits of the water for domestic purposes.

Unfortunately, the efforts of sanitarians to protect the public, frequently meet with such rebuffs. The financial interests involved so frequently outweighs every other consideration, that it is discouraging to attempt such responsible business as advising public officers in matters appertaining to the public health. It is too often the case that they seek for advice hoping that it will coincide with the schemes they have on hand, they deeming it entirely proper to accept or reject it, as it suits their convenience.

In the case of the introduction of water into the city of Wilmington, we have an example of what is liable to happen in every town in the State. The Board of Health assiduously studied the sources of water, publishing the results from time to time. As soon as the conviction was brought home to the community that a public supply of better water was necessary, then the matter was no longer allowed to remain a sanitary, but a financial one. This has been rather too hastily sketched to bring out all the points of interest, but enough has been said to warn corporations of the unwisdom of contracting for water-works without first having it explicitly stated the source from whence they are to draw their water supply.

No better opportunity could occur in the history of a State than in our own, to forecast the needs of towns in respect to the water supply, and to establish fundamental laws for the erection of water-works. Now is our opportunity to establish sanitary principles for the guidance in advance of the establishment of water supply in our towns, and save to the State complex legislation in the future. This very question which is now no one's business but that of the capitalists, has caused other States a vast deal of

anxiety. The pollution of streams in densely settled States, requires the greatest vigilance and carefully framed statutes for its regulation; and even then, as is evidenced by the unsatisfactory condition of the water supply in Massachusetts, we are informed that within ten years the Legislature of that State passed one hundred and fifty-two acts and resolves in regard to water supplies for cities and towns.

The Board of Health has been in time with their advice to save other communities in the State from blunders, and having done their duty they hope that intelligent council will prevail in the future.

COUNTY CANVASSERS FOR THE PURPOSE OF SECURING THE ATTENTION OF THE LEGISLATORS TO THE WORK OF THE BOARD OF HEALTH.

At the conjoint session of the Board of Health at Asheville in 1881, the Secretary of the Board was directed to consult with the President of the Medical Society of North Carolina, and make up a list of canvassers, one for each county. The Secretary of the Board being for that year also President of the Medical Society, the list was made. Agreeably to direction, he selected such persons as were members of the Society, but in counties where there was no resident member, the most active medical men, according to the best information available, were selected.

The following is the list. It is very incomplete, and many erasures and additions will be necessary before it will fulfil the design:

NAMES OF GENTLEMEN APPOINTED TO CANVASS THE WORK OF THE BOARD OF HEALTH WITH A VIEW TO FUTURE LEGISLATION.

Alamance,	Dr. George W. Long.
Alexander,	
Alleghany,	Dr. John L. Smith.
Anson,	" Simpson Jones.
Ashe,	" James Wagg.
Beaufort,	" John McDonald.

Bertie,
Bladen, ... Dr. James S. Robinson.
Brunswick, ... " W. G. Curtis.
Buncombe, ... " W. L Hilliard.
Burke,
Cabarrus, ... Dr. W. H. Lilly.
Caldwell,
Camden, ... Dr. J. H. Pool.
Carteret, ... " Manney.
Caswell,
Catawba, ... Dr. George H. West.
Chatham, ... " L. A. Hanks.
Cherokee, ... " Patton.
Chowan, ... " R. H. Winborne.
Clay, ... " Killyan.
Cleveland, ... " J. C. Gidney.
Columbus, ... " M. R. Morrison.
Craven, ... " Frank Duffy.
Cumberland, ... " T. D. Haigh.
Currituck,
Dare,
Davidson, ... Dr. R. L. Payne.
Davie,
Duplin, ... Dr. Henry W. Faison.
Edgecombe, ... " L. L. Staton.
Forsyth, ... " H. T. Bahnson.
Franklin, ... " E. S. Foster.
Gaston, ... " E. B. Holland.
Gates,
Graham,
Granville, ... Dr. W. R. Wilson.
Greene, ... " W. C. Galloway.
Guilford, ... " W. P. Beall.
Halifax, ... " Isaac E. Greene.
Harnett,
Haywood, ... Dr. G. D. S. Allen.
Henderson, ... " J. L. Edgerton.
Hertford, ... " R. P. Thomas.
Hyde,
Iredell. ..... Dr. Thomas E. Anderson.
Jackson, ... " J. M. Chandler.
Johnston, ... " R. J. Noble.
Jones,
Lenoir, ... Dr. Henry Tull.

Lincoln,.....Dr. J. M. Lawing.
Macon,..... " S. H. Lyle.
Madison,..... " W. L. Reagan.
Martin,..... " T. S. Burbank.
McDowell,.....
Mecklenburg,.....Dr. J. Graham.
Mitchell,.....
Montgomery,.....Dr. W. A. Simmons.
Moore,..... " A. V. Budd.
Nash,..... " David N. Sills.
New Hanover,..... " J C. Walker.
Northampton,..... " V. S. McNider.
Onslow,..... " J. L. Nicholson.
Orange,..... " T. B. Harriss.
Pamlico,.....
Pasquotank,.....Dr. Wood.
Pender,..... " W. T. Ennett.
Perquimans,.....
Person,.....Dr. R. S. Bayn's.
Pitt,..... " C. J. O'Hagan.
Polk.....
Randolph,.....Dr. C. W. Woollen.
Richmond,..... " J. M. Covington.
Robeson,..... " R. F. Lewis.
Rockingham,.....
Rowan,.....Dr. J. J. Summerell.
Rutherford,.....
Sampson,.....Dr. A. Holmes.
Stanly,..... " T. F. Meisenheimer.
Stokes,..... " M. D. Phillips.
Surry,.....
Transylvania,.....Dr. C. W. Hunt.
Tyrrell,.....
Union,..... Dr. Isaac H. Blair.
Wake,..... " R. H. Lewis.
Warren,..... " George A Foote.
Washington,..... " L M. Powers.
Watauga,..... " W. B. Council.
Wayne,..... " J. D. Roberts.
Wilkes,.....
Wilson,.....Dr. John K. Ruffin.
Yadkin,..... " L. G. Hunt.
Yancey,.....

A circular will be published by the Board in November or December, and these will be distributed to every county. The Secretary would esteem it a favor to get the name of one active physician for every county to coöperate in the proposed canvass.

Respectfully submitted,

THOMAS F. WOOD, M. D.,

Secretary N. C. Board of Health.

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